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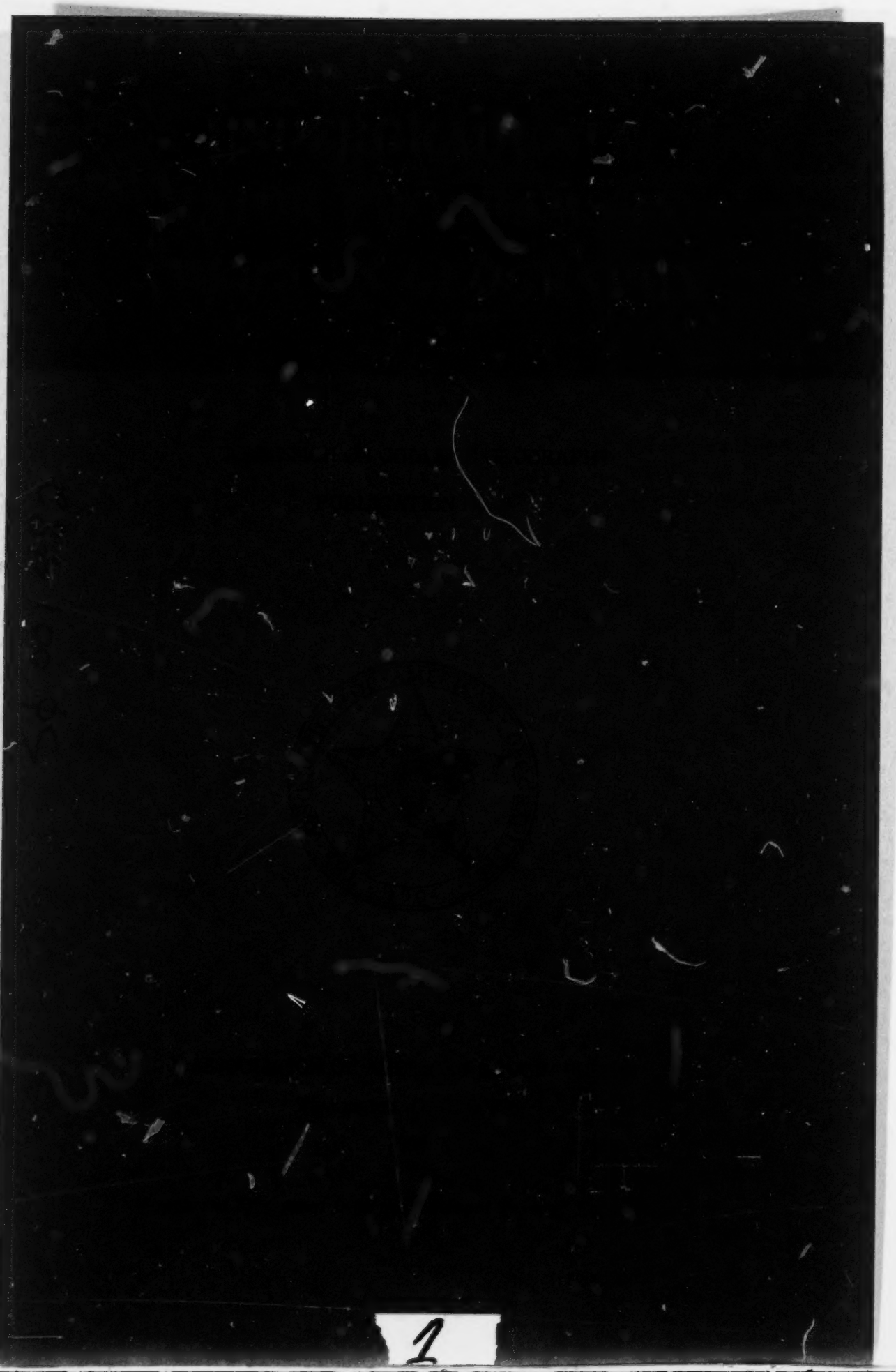
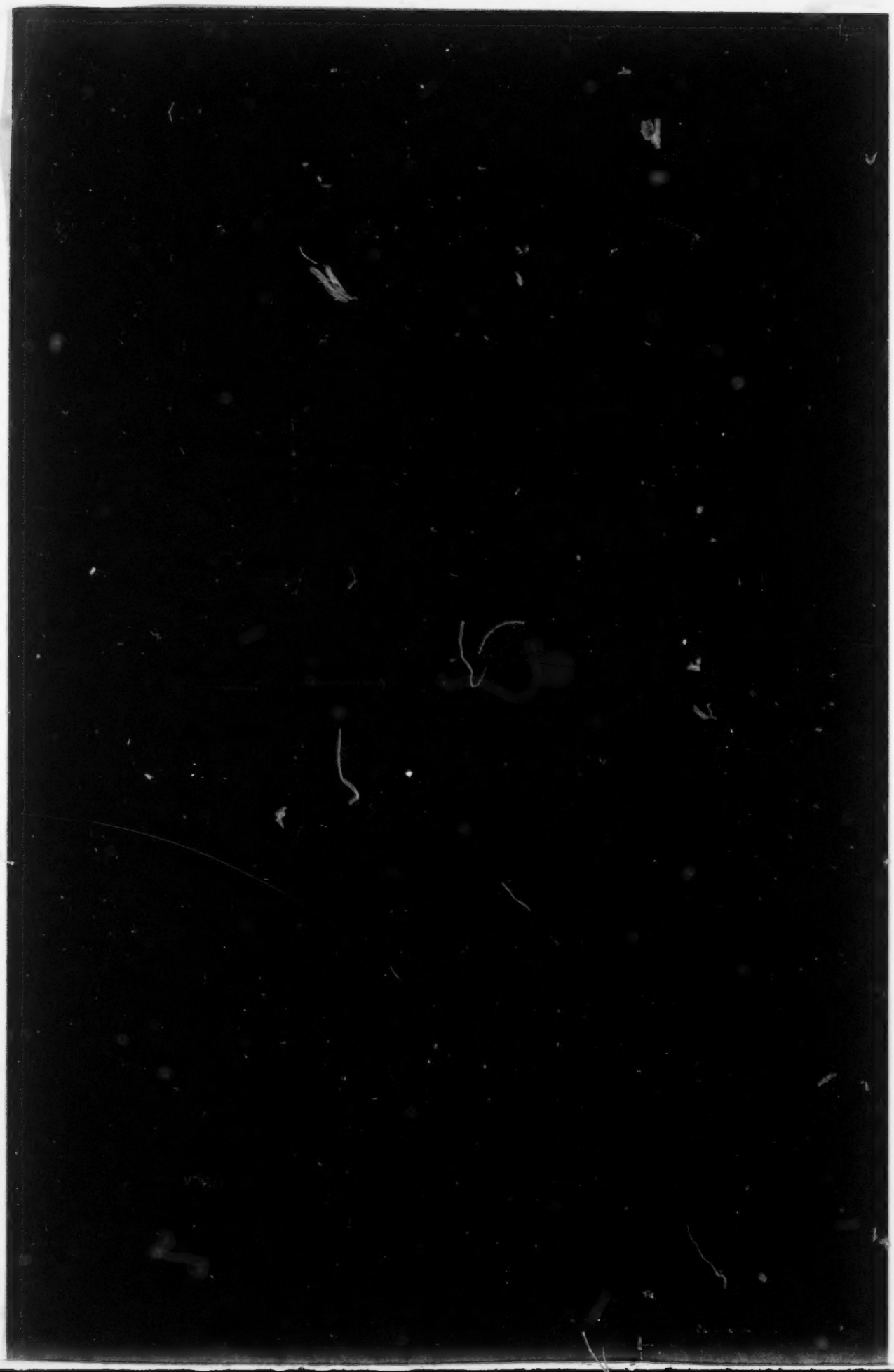
ABSTRACT

This report is the result of an intensive analysis of five departments of geography in differing types of institutions: 1) Dartmouth College, an undergraduate liberal arts institution; 2) Indiana University of Pennsylvania, a former teachers college; 3) San Fernando Valley State College, a large, rapidly growing institution with a large intake of junior college students; 4) Southern Illinois University (Carbondale), an institution with an emerging doctoral program; and, 5) University of Minnesota, a large university with an all-degree program. The bulk of the report consists of descriptions, by chairmen of the departments, of the undergraduate major programs: degree requirements, faculty, facilities, courses, objectives, teaching load, student recruitment, advising. These descriptions present an idea of the diversity of geography in the United States in the fall of 1967, and set forth guidelines and a variety of suggestions which will be useful to any professional geographer who is concerned with undergraduate program. An effort has been made to report on the present state of the art and to refrain from value judgments on innovation. Some of the salient differences and similarities between these departments are summarized in the introduction to the report and an appendix. (Author/JSB)





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# UNDERGRADUATE MAJOR PROGRAMS IN AMERICAN GEOGRAPHY

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# FOREWORD

In the spring of 1967 the Commission on College Geography appointed a Panel on Program Inventory and Development to assist those geography departments which are dedicated to the improvement of their undergraduate programs. After conducting a preliminary survey of 45 departments in the United States, the Panel decided to make an intensive analysis of five departments of geography in five widely differing types of institutions.

After an introduction which summarizes some of the salient similarities and differences between these departments, and relates them to information gained from the preliminary survey, the bulk of this report consists of descriptions of the undergraduate major programs in each department. These are not formal evaluative statements, which would have required enormous amounts of time and money for the collection of empirical data; they are simply descriptions by individual geographers who happen to be chairmen of the departments they describe. These descriptions do present a fair idea of the diversity of geography in the United States in the fall of 1967, and they contain a remarkable variety of suggestions which will be useful to any professional geographer who is concerned with the improvement of content and instruction in undergraduate programs.

The Panel expresses its appreciation to each chairman for the time he has taken from his other duties and devoted to the preparation of his statement, and for his willingness to permit his statement to be forced into the Procrustean bed of the Panel's standardized format. The Editor expresses additional appreciation for the counsel of Robert H. T. Smith, for the infrastructural services provided by the Department of Geography at the University of Minnesota, and for the aid and assistance of Elaine Chadwick, Sharon Bullock, and Joanne Morris.

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# THE UNDERGRADUATE MAJOR PROGRAM IN GEOGRAPHY

John Fraser Hart

## Introduction

A concern for curricular revision and improvement is one of the hardiest and most ubiquitous perennials on the American educational scene. Among some educators, in fact, the passion for curricular revision has assumed the dimensions of a new quest for the Holy Grail; if only the perfect set of rules can be discovered, then all mortal ills will be healed, and Truth will Reign Supreme.

Although geographers are not immune to this affliction, there are many reasons why no individual or group should presume to set forth an ideal, or even a recommended, program in geography. In the first place, each educational institution is unique. It has its own history, its own traditions, and its own distributive requirements. The curriculum which is a resounding success at one institution could be a complete failure if transferred lock, stock, and barrel to another.

Secondly, an educational system must be dynamic, and the curriculum must reflect the changes which are taking place in the discipline. In a rapidly growing discipline such as geography, the curricula of 1915 are just as outmoded as the deterministic geography of 1915.

Thirdly, a curriculum normally lists only course titles, but a course title can mean all things to all men, and nothing to anyone.

Fourthly, any published curriculum, especially one which bears the imprimatur of a national organization, tends to develop an aura of sacrosanctity in the minds of many people. It may be adopted in toto, often despite the fact that some of its provisions are blatantly inappropriate to the local situation. Such a curriculum, which should be a goal for one department, and a point of departure for another, tends to become a lowest common denominator for all.

Finally, a concern with undergraduate major programs and curricula in geography may very well be completely irrelevant, because no system can be better than the people who are trying to make it work. An educational program can be improved only by providing more effective instruction and by attracting higher caliber students.

Nevertheless, a good teacher ought to be able to do an even better job in an improved environment, and good students ought to be able to learn better under the right circumstances. In the belief that no human institution is so good that it cannot be improved, and that no geography department is so good that it cannot profit from the experience of others, this report has been prepared.

A further justification, despite the caveats expressed above, is the fact that this is a time of rapid growth and change for many geography departments. Established departments which are expanding, and new departments which are being created, have much to learn from the experience of others who have already been through the mill. Furthermore, the rapid growth of junior and community colleges, with attendant problems of transfer of credits, is a strong argument for greater standardization of curricula at state and national levels.

This report is an attempt to share the experiences of many geographers, working in many departments, who have been genuinely concerned with the improvement of undergraduate instruction. A determined effort has been made throughout it to maintain an attitude of ambivalence, not of dogmatism, in setting forth guidelines which might be consulted by any

geographer, and by any geography department, with an interest in better undergraduate instruction and improved curricular content. An equally determined effort has been made to report on the present state of the art, and to refrain from value judgements on innovation, in the belief that what is new in one department may well have been common practice elsewhere for quite some time.

American geography today is going through a period of transition and experiment, and at such a time considerable diversity is to be expected. Like some other disciplines, such as biology and history, geography flows in many channels, and the relative importance of each channel varies from time to time and from department to department. There is a compelling need, however, for better justification, based on empirical evidence wherever possible, for the diversity which currently exists in programs and courses.

The great majority of professional geographers probably could approximate a consensus as to the core of skills, knowledge, and attitudes which should be the hallmarks of any educated person who receives a baccalaureate degree in geography. This report is an attempt to identify that consensus.

## Background

In the spring of 1967 the Commission on College Geography established a Panel on Program Inventory and Development in an attempt to assist departments which are dedicated to the improvement of their undergraduate programs. The Panel discovered that efforts to improve undergraduate instruction have taken several forms. The Commission on Undergraduate Education in the Biological Sciences, for example, has undertaken an extraordinary detailed investigation of the content (in terms of every item, concept, or piece of factual information to which the instructor devoted as much as five minutes) of core biology programs at four selected institutions.[1] The Mathematical Association of America has produced A General Curriculum in Mathematics for Colleges, in which the content of thirteen individual courses is described in explicit detail.[2] The Commission on Education in Agriculture and Natural Resources has proposed a broadly based curriculum for prospective managers and scientists in the area of renewable natural resources, which includes a basic core of general education courses, core programs in four separate areas of emphasis, a limited number of professional courses, and an integrating terminal seminar.[3]

The Panel of geographers decided that their primary thrust should be aimed in two directions: (1) the development of a statement concerning the content and character of undergraduate major programs in geography; and (2) the exchange of information and experience on methods of recruiting and retaining better students in geography programs, a facet of undergraduate education which has not been stressed in the reports of other groups.

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1. *Content of Core Curricula in Biology: Report of the Panel on Undergraduate Major Curricula*, Publication No. 18 of the Commission on Undergraduate Education in the Biological Sciences, Washington, 1967.

2. *A General Curriculum in Mathematics for Colleges: A Report to the Mathematical Association of America*, Berkeley: Committee on the Undergraduate Program in Mathematics, 1965.

3. *Undergraduate Education in Renewable Natural Resources: An Assessment*,. Publication 1537 of the National Academy of Sciences, Washington, 1967.

## The Preliminary Survey

To explore the first point, the Panel conducted a survey of undergraduate major programs in a stratified sample of 45 geography departments in the United States during the spring of 1967 (Appendix A). The chairmen of the departments cooperating in the survey were invited to participate in an open forum held in conjunction with the meeting of the Association of American Geographers at St. Louis in April, 1967, and about half were able to attend or to be represented. The chief points of discussion are summarized at the appropriate places below.

This open forum demonstrated that attempts to generate widespread and effective communication between geography departments about their undergraduate programs is seriously hindered by the fact that departments in different kinds of institutions may have quite different kinds of problems, and an idea or program which might be extremely effective in one kind of department might be almost useless in another.

## The Detailed Survey

In an attempt to foster wider interdepartmental dialogue, therefore, the Panel selected five departments of different types for a more detailed in-depth analysis, including visits, interviews with faculty members and students, and examination of student undergraduate records and post-graduation careers. Statements on the undergraduate major program in geography at these five departments constitute the body of this report. This introduction summarizes some of the major similarities and differences in the departmental reports, and relates them to information gained from the earlier survey of 45 departments and the discussion in St. Louis.

Many geography departments in the United States have large and reputable undergraduate programs in geography, and several groups of five, other than the group actually chosen, could have been selected. In other words, there was no thought of disparaging numerous other departments when Dartmouth College was selected as an example of a predominantly undergraduate liberal arts institution; Indiana University of Pennsylvania as an example of a former teachers' college; San Fernando Valley State College as an example of a young, rapidly growing institution with a large intake of junior college students; Southern Illinois University (Carbondale) as an institution with an emerging doctoral program; and the University of Minnesota as an example of a large university with an all-degree program. One might note, however, that these five departments combined granted more than ten percent of all baccalaureate degrees in geography in the United States between 1960 and 1965, and they ranked sixth, first, twenty-first, ninth, and second, respectively, in terms of total number of first degrees granted in geography.[4]

## The Institutional Setting

The constraints and permissiveness of the home institution have a major impact on the kind of program which any geography department can mount. The majority of geographers would probably agree that the most

4. *Geographic Manpower: A Report on Manpower in American Geography*, Commission on College Geography Publication No. 3, Washington: Association of American Geographers, 1966, p. 11.

important requirement for a first degree in geography ought to be a good, broad, liberal education, although they might have some difficulty in agreeing on the details of what constitutes such a background.[5] It might be assumed that the distributive requirements of a college of liberal arts constitute the college's own idea of the minimal prerequisites to a liberal education; certainly few geography departments demand that their major students take "liberalizing" non-geography courses above and beyond the distributive requirements of their institution.

## Distributive Requirements

The distributive requirements, therefore, provide the foundation on which the geography major program is built, and defects in these requirements demand serious thought on the part of the department. For example, if a foreign language is not required, should the student be required to take one; if so, what degree of facility should he be expected to attain? If no math is required, should the geography major be required to take any; if so, how much? Questions such as these, although not specifically part of the undergraduate program in geography, are of such importance in understanding such a program that each chairman preparing a statement for this report was asked to give a brief description of the distributive requirements under which his department operates.

## Faculty and Facilities

Each chairman was also requested to prepare a brief statement concerning the size of staff and number of students, because of their obvious relevance to the possible variety of course offerings, and a statement concerning available facilities. In general, it may be said that the instructional program of the successful department is not handicapped by problems of space in offices, classrooms, laboratories, or library.[6]

It is worth noting that the faculty members of the thriving department are as actively involved in the larger affairs of their institution as they are in the affairs of their own department. In a measure, this is a matter of enlightened self-interest, because it ensures that the department's interests will be protected in such matters as budget, space, and distributive requirements. Unfortunately, this role has been over played by some departments, whose well-being is based on massive enrollment in an introductory physical geography course which, although it satisfies a physical science distributive requirement, often is not respected by other science departments, and frequently is not introductory to any further work in physical geography in the department.

## The Major Program

The content of undergraduate programs in geography can be improved by dedicated individual teachers, who are willing to devote their time and

5. *Geography in Undergraduate Liberal Education*, Commission on College Geography Publication No. 1, Washington: Association of American Geographers, 1965.

6. A number of geography departments have strengthened their library holdings by using as an acquisitions checklist *A Basic Geographical Library: A Selected and Annotated Book List for American Colleges*, Commission on College Geography Publication No. 2, Washington: Association of American Geographers, 1966.

energy to improving the courses for which they are responsible, or it may be improved by the decisions of all the staff members who are responsible for the entire area of instruction. The members of a geography department, for example, may seriously inquire why certain courses are or should be required, thinking about the student as a civilized human being, and pondering the core of skills, knowledge, attainments, and attitudes which should be the hallmarks of anyone who holds a baccalaureate degree in geography.

Most professional geographers, and most geography departments, seem to agree that there is a basic core of courses which should be required of the undergraduate major student. For some departments such a core is a goal toward which to strive, whereas for others it represents a point of departure. Variations in institutional situations make diverse curricular patterns inevitable, and no rigidly standardized national curriculum would be possible even if it were desirable, although perhaps a greater degree of standardization might be achieved within individual courses. The courses listed here are those which seem to be required by most geography departments. They are listed to serve as guidelines, to be used in the light of the circumstances which exist on each individual campus, not as a basis for standardization or regimentation.

## Requirements

Required courses. – The standard major program in geography in the United States requires some exposure to an introductory course in physical geography, which often is accompanied by a laboratory and some experience in map interpretation.[7] It is also usual to require an introductory course in the broad area of human/cultural/economic geography, which may be approached in a variety of fashions.[8] Most departments require the student to take at least one regional geography course, which may or may not be a stipulated region. A course in map reading, cartography, or graphics normally is required, although in some of the larger departments the student may elect an alternative from a longer list of techniques courses. Many departments consider a field course desirable, and a capstone course of some sort in the senior year is strongly supported.

Sequence of courses. – Professional geographers honestly and vigorously disagree as to whether the courses in the geography curriculum can or should be sequential. At one extreme is the permissive approach, in which no specific courses are required, although students are required to elect a certain number of courses in such areas as systematic geography, regional geography, and geographic techniques. At the other extreme is the hierarchical approach, similar to that of the physical sciences, in which each course builds directly upon its predecessors, and a student cannot expect to pass any course if he lacks the proper prerequisites.

The middle approach, which is not necessarily the best merely because it is the most widely followed, might be called the standardized

7. Introductory courses in physical geography are discussed in *Geography in Undergraduate Liberal Education*, Commission on College Geography Publication No. 1, Washington: Association of American Geographers, 1965, and in *Introductory Geography: Viewpoints and Themes*, Commission on College Geography Publication No. 5, Washington: Association of American Geographers, 1967.

8. Four introductory college course outlines are discussed in *New Approaches in Introductory College Geography Courses*, Commission on College Geography Publication No. 4, Washington: Association of American Geographers, 1967.

approach. Certain introductory courses, such as those mentioned above, are required of all geography majors, but after he completes this core the student is free to branch out into semi-specialized concentration areas such as cartography, cultural geography, economic geography, geographic education, physical geography, planning, or urban geography. It is generally recognized that the person with a baccalaureate degree in geography with such a concentration is not a competent professional, but he is considered capable of further growth either as an advanced student or in a moderately challenging occupational situation.

Number of courses.—It is generally agreed that there should be an upper limit on the number of courses in geography that a student may elect. Undergraduate courses tend to be redundant after a number have been taken, and thus they are easier to handle than courses in other areas. Too many will cut into the student's general education program and reduce the probability that he will obtain an adequate background in supporting fields. Because conflicting opinions exist on the subject, it would be useful to have an objective study to determine whether a heavy concentration in the major field is a help or a hindrance to the student who goes on to graduate work in geography.

The student who will seek technical employment after the baccalaureate degree, however, as a planner or cartographer, for example, might require additional specialized technical courses which are offered in the geography department.

## Individual Required Courses

It is not easy to find out what actually goes on in required courses, in contrast to catalog descriptions, and it is even more difficult to find out why required courses actually are required. For example, it appears to be an article of faith among American geographers that every undergraduate major student should be exposed to a course called physical geography, perhaps to more than one, yet it is exceedingly difficult to elicit justification for this belief. The same applies to an introductory course in human/cultural/economic geography; most geographers feel that the major student should have such a course, but few seem to have put in writing, or documented their thoughts, as to the reasons why.

Regional courses.—There seems to be general agreement that any attempt to give the undergraduate student complete world coverage through regional courses is undesirable. Regional courses should be offered, and world coverage might be provided if the department is large enough and has appropriate staff interests, but the individual student probably should be discouraged from taking more than two or three such courses.

The substantial increase in demand for regional geography courses from area studies programs is in itself a substantial justification for frequent offerings of such courses, because geography ought to be an integral part of any area studies program. If geographers fail to offer regional courses there is a serious danger that other social scientists, not nearly so well prepared, will offer them and teach naive environmental notions which geographers rejected a generation ago.[9]

The field course.—Many geographers believe that a field course is a highly desirable element in any undergraduate major program in geography,

9. *Cf.* Marvin W. Mikesell, "Geographic Perspectives in Anthropology," *Annals of the Association of American Geographers*, Vol. 57, September 1967, pp. 617-634.

despite the fact that a comparatively small proportion of the departments offering major programs have such a course. The explanation may lie in expense, confusion about content and organization, scheduling problems, inaccessibility of appropriate field areas, or the unwillingness of faculty members to accept the very heavy time demands of such a course. A contributory factor may be failure to realize that effective undergraduate field instruction need not involve the heavy expense of the traditional summer field camp; it can be handled quite efficiently with an on-campus, in-term field course in which Saturdays are devoted to field exercises.[10]

The capstone course. – The comprehensive, capstone, "wrap-up" terminal course for the undergraduate major, which normally is taken in the senior year, may take the form of a problem oriented field course, or it might be handled as a research project, thesis, senior seminar, or in tutorial fashion. It should involve small groups to permit informal discussion, individual presentations, personalized instruction, and an opportunity for the student to relate what he is doing to the entire discipline of geography. Since the demands of such a course are on a graduate level, perhaps the undergraduate should have the option of taking it on a pass-fail basis. It should stimulate the interested and able student to continue into graduate school, and discourage the student for whom graduate school would be inappropriate.

Objections have been expressed to the use of tutorials, despite their effectiveness, because they are so time consuming, but several departments, even those with large numbers of undergraduate majors, believe that tutorials do not have to be onerous if they are made optional and are elected only by the better students.

The philosophy of geography. – A matter related to the terminal course is the question of how early in the undergraduate program students should be introduced to the history, philosophy, and structure of geography, in terms of the kinds of questions geographers ask, the reasons why they ask them, and the methods and kinds of evidence they use in seeking answers. Too many programs concentrate on teaching facts, often apparently unrelated facts, in their early portions, and the student fails to develop a clear idea of the nature and scope of the field until late in his undergraduate career, if then. Earlier emphasis on the kinds of questions geographers ask, and the ways in which they try to answer them, would help the student to get a better grasp of the field, and even to learn for himself many of the facts which he needs. Some geographers believe that the introductory course might not be too early for material of this kind.

Innovation and evaluation. – If a completely new or innovative program were to be developed in geography, it would need to be evaluated against more traditional major programs, but few geographers are competent in the sophisticated techniques required for objectively evaluating the effectiveness of particular major programs. Perhaps a single large department might conduct a formal comparative test of a radically new program against a traditional one, with controlled groups of students. At the present time, however, no program appears to be radically new enough to justify the expense, in time and money, of conducting such a test.

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10. *The Role of Field Work in Geographic Instruction*, Technical Paper No. 1 of the Commission on College Geography, Washington: Association of American Geographers, 1968, is a "how to do it" report which discusses geographic field work at various levels of instruction.

## Concentrations and Clientele

Undergraduate major programs in geography may be designed to prepare students for four broad career goals. Large university departments might have representatives of all groups, whereas most departments would be unlikely to have representatives of more than two or three. These career goals are:

(1) To become liberally educated citizens without specific vocational goals in geography. Upon graduation, the individual will build a career in almost any area that requires broadly educated people, but demands no specific professional preparation. Most geographers feel that their discipline can serve such people extremely well.

(2) To become teachers in elementary and secondary schools. Although this is the largest group of undergraduate geography majors in the United States as a whole, in some departments it scarcely exists. The elementary teacher will teach geography as one of many subjects, although in some states she is required or encouraged to take an academic major in a discipline. The secondary teacher may teach geography exclusively, but he is more likely to teach other subjects, and may well not teach even one course that is strictly geography.

(3) To seek a graduate degree in geography. Those who are preparing to seek a graduate degree and a career as a professional geographer in college teaching, government service, or some other professional activity form the second largest group of undergraduate majors.

(4) To enter professional and sub-professional careers without further training. These people would like to be able to tell a prospective employer that they are geographers, and wish to be prepared to assume specific, recognized vocations in areas such as cartography or planning, which are in demand in the labor market.

Many undergraduates are likely to shift career goals at least once between the time they select an undergraduate major and the time they finally receive their baccalaureate degrees. Perhaps the same basic major program, with minor elective adjustments, could serve the first three groups, but the fourth group might well require its own curriculum with a certain number of specialized courses which develop marketable skills. Some geographers, however, would argue that a separate and distinctive program should be tailored for each group.

## Cognate Requirements

One of the most vexing problems facing the curriculum builder in geography is the question of what courses should be required in cognate disciplines. This question can only be answered locally, and the answer must be related to three variables: the distributive requirements of the institution, the strength of cognate departments, and the needs of the student. It seems pointless, for example, to say that a geography major should have a year of English composition and literature, when most institutions require it of all their graduates, yet the ability to speak and write his mother tongue is one of the most important skills he can acquire. It is recognized, of course, that merely passing courses in English does not necessarily confer that kind of literacy.

Cognate areas. – Although each student should be encouraged, perhaps even forced, to do substantial work, up to the equivalent of a minor, in a cognate field which will support his principal geographic interest, the

outside fields which are so important that all geographers should be exposed to them are probably few. Perhaps the easiest and best answer is to say that work outside the field of geography should depend upon the needs and aspirations of the individual student, on his career objectives and future aims, and on the strength of cognate departments in the local institution. It would seem foolish, for example, to send a student to take work in a local department which is weak, or to fail to capitalize on a strong one.

Foreign languages.—Students of geography need to be aware of the desirability of developing a high degree of competency in the use of at least one foreign language. The importance of the traditional languages (Romance, Germanic, and perhaps Slavic) must be recognized, but in addition, the regional interests of some geographers will require them to develop fluency in some of the more exotic Afro-Asian languages such as Hausa, Hindi, Swahili, Tagalog, or Tamil. The student who fails to begin work on such languages fairly early in his undergraduate career may be seriously handicapped if his geographic interests take him to a part of the world where they are used.

Mathematics and statistics.—A few professional geographers believe that mathematics and statistics are not essential in the training of a geographer, and undoubtedly geographers will continue to make significant contributions using other methodologies and techniques. Nevertheless, these tool subjects have great potential value for analyzing the relationships between numerous variables in complex situations, and they can give effectiveness and precision to much geographic research, which frequently is hampered by operational procedures because geography is an observational science, not an experimental one.

The recent literature of the field appears to indicate the need and place of mathematics and statistics in geographical training, although there is considerable disagreement as to how much of each is desirable. Some graduate departments, for example, believe that incoming graduate students should have completed at least a year's work in calculus, and at least one statistics course in addition to descriptive statistics so that they will have some understanding of statistical inference and probability.

Cross-numbering.—Where course and hour requirements are tight, some departments have experienced considerable success with "cross-numbering" courses in cognate departments by giving them geography department numbers as well. For example, a geomorphology course taught in the geology department, or a statistics course taught in the economics department, might be given a geography department number. This would enable the geography major student to receive geography credits for important and useful courses which are actually taught outside the geography department.

## Faculty Involvement

No system can be better than its personnel; if the faculty are not competent, enthusiastic, and involved, the undergraduate major program in geography cannot be good. And the faculty at all levels must be enthusiastically involved; superior undergraduate programs are rarely developed by assistant professors. The two most important factors contributing to a successful undergraduate major program in geography are content and instruction of the highest quality in introductory courses, and a wholehearted commitment by the senior staff to the importance of the entire program.

An effective and enthusiastic staff is impossible without a democratic decision making process and a realistic teaching load. Although the notion must seem obvious to most departments, there are still a few which may be surprised to learn that the entire staff, and not just the chairman, must be involved in departmental decision making.

What is a realistic teaching load? The ideal probably is a total load of 6 to 8 contact hours per week, although this flies in the face of the contemporary cost accounting principles of many university administrators. Some departments, which are forced to handle large numbers of students, use large lecture sections (including televised lectures) which are conducted by full time staff members, and smaller discussion sections, which are conducted by graduate teaching assistants. Others, which are required to maintain heavy contact hour instructional schedules, grant large numbers of contact hour credits for instructional duties which require numerous informal, rather than formal, instructional contacts, such as readings, honors courses, and seminars. Programmed learning and computer assisted instruction are recent developments in mass education which are currently being investigated by the Commission on College Geography.

One of the paradoxes of faculty involvement is the fact that some of the strongest graduate departments of geography, departments that should be able to mount especially strong undergraduate programs, actually have very few undergraduate major students;[12] as a corollary, a very large fraction of professional geographers receive their undergraduate preparation in departments which are less prestigious. Until the more prestigious departments dedicate more of their efforts toward the training of undergraduate students in geography, they will remain in the parasitic position of depending upon the less prestigious departments for their intake of graduate students.

## The Undergraduate Major as an Institution

### Recruiting

Most institutions that have been unusually successful in recruiting undergraduates who have ultimately become successful professional geographers have done so because their staffs contained one or more competent and enthusiastic teachers. It is particularly important to have instruction of the very highest quality in introductory courses, from which the majority of undergraduate majors are recruited. Furthermore, the senior staff of the department must be wholeheartedly committed to the importance of the undergraduate program, and they must be ready and willing to teach introductory courses as appropriate.

The faculty must be aggressive in seeking out the better students in their introductory courses, and in encouraging them to take additional work in geography. It is useful if the faculty member can write a personal letter to each superior student in his freshman courses, inviting him to consult personally, and suggesting that he enroll in special honors courses or sections for superior students. Teaching assistants in large introductory courses should be carefully briefed on the character of the undergraduate major program, and on career opportunities in geography, and they should be encouraged to act as informal advisors to their students, who may feel able to talk more freely with persons nearer their own age.

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11. *Geographic Manpower: A Report on Manpower in American Geography*, Commission on College Geography Publication No. 3, Washington: Association of American Geographers, 1966, p. 9.

There is some disagreement about the importance of the point in the student's academic career when he declares his major. In general, it appears that late declaration of a major poses no particular problem if the student has an adequately broad liberal arts background. Various devices have been used to spread the word through the school systems which feed those institutions where departments feel that an early declaration of major is important. Brochures have been prepared for widespread distribution in the schools, faculty members have visited and lectured in high schools, and they have worked with local school systems in developing high quality secondary school courses.

Few geography departments are doing an adequate job of maintaining contact with the school systems which feed them, or with the alumni they have produced. Students and teachers should be invited to the campus for orientation and refresher visits. Many institutions hold special days for superior high school students, to expose them to the entire institution, not just to geography, but geographers can and should play an appropriate role on such occasions.

Geography departments might organize alumni days and events for their own graduates who are now teaching, to acquaint them with the latest developments in the department and in the profession. Enthusiastic graduates who are doing an exciting teaching job are among the best recruiters a department can have, whether they are secondary school or junior college teachers feeding in prospective undergraduate majors, or college teachers feeding in prospective graduate students. Every department with any considerable number of alumni should keep in contact with them through an alumni news letter.

Extra-curricular departmental activities provide an excellent means of maintaining the morale of the major group, and quite often, of exciting the interest of non-majors. The common vehicle is an undergraduate geographical society which arranges special programs, field trips, social events, and might even assume responsibility for the departmental news letter.

## Advising

A strong advising system is an essential ingredient of any program which seeks to recruit and retain superior students. In some departments all members of the faculty serve as undergraduate advisors, leaving the student free to seek out the person whose interests are most congenial to his own. In others the responsibility for undergraduate advising is discharged by a single faculty member, although there is a clear danger that the person who assumes this responsibility may be victimized when the time comes for salary increases and promotions.

Paradoxically administrators, who almost to a man pay lip service to the ideal of high quality undergraduate instruction, must be educated to the necessity of providing released time, and suitable recognition where salaries and promotions are concerned, to the individual faculty member who devotes a large amount of his time to advising, or to any other aspect of the undergraduate program. The individual faculty member, however, should not be permitted to substitute an intense commitment to the undergraduate program for an active concern with scholarly research and publication in geography; a department whose undergraduate major program is run by a person without an active professional commitment is probably worse off than one which has no clear commitment to the undergraduate program.

## Careers

Most geography departments appear to know little, beyond mere gross numbers, about the students who have taken undergraduate degrees with them. For example, how closely do their first selections of positions match their declared career objectives? How does this match correlate with their success as students? How do graduates of the departmental program evaluate its effectiveness in their present careers?

Many geographers are concerned over the small number of liberal arts students who take geography (as opposed to history or English, for example) without specific career objectives, and the fact that many undergraduates are attracted into the field solely because of the professional and sub-professional career opportunities it offers. Vigorous efforts must be made to convince major industries and local employers that a person with a baccalaureate degree in geography is a liberally educated person who is well worth hiring. Geography must improve its image with prospective employers, as well as with scholars in other disciplines.

## Some Conclusions, Questions, and Random Notes

1. Undergraduate programs in geography have a greater degree of similarity than is commonly realized. The consensus program in geography probably has not changed very much in the last two decades, perhaps even longer. It is reflected quite accurately in the lists of the major publishers of geography textbooks. Has this consensus program persisted because of its excellence, or because of inertia?

2. The fact that most undergraduate programs in geography list the same course titles does not necessarily mean that the content of these programs is similar, because course titles can mean all things to all people, and nothing to anyone.

3. Most undergraduate major programs in geography consist of a core program, which is required of all students, and a concentration area, in which the student develops a limited degree of specialization.

4. The majority of core programs tend to be permissive rather than restrictive. They consist of groups of courses from which the student is permitted to select the course of his choice, rather than specified courses which must be taken by all undergraduate majors.

5. A kind of course which appears too often in core programs is a course on a rather specialized subject (such as the geography of manure, to use an outrageous illustration) which probably should not be required of all undergraduate majors, but actually is required, apparently because some member of the faculty is powerful enough (whether through seniority, pugnacity, obstinacy, vociferousness, or what have you) to insist that it must be required.

6. A kind of course which appears in too few core programs is a "wrap-up" course in the final year (whether it is called colloquium, senior seminar, independent readings, or something else) in which the students are assisted in pulling together all the threads they have been collecting in their various courses both within and outside the department.

7. Few geography departments offer a field course, despite the fact that many geographers believe such a course is a highly desirable element in an undergraduate major program in geography.

8. The principal undergraduate concentration areas are physical geography, cultural geography, economic geography, cartography, planning, and

teaching of geography. Is this list adequate, or should additions or deletions be made? How many concentration areas should a single department attempt to offer, in view of its staff and facilities?

9. Undergraduate major programs in geography appear to have been structured in terms of traditional topics and course titles, not in terms of the needs of the individual students who are enrolled in them. Would it be possible or desirable to develop a student-oriented program by thinking through two questions: (a) what do we expect a person with a baccalaureate degree in geography to know, to know about, and to know how to do? (b) how might we structure a program—not just a sequence of courses—to inculcate these attitudes, this knowledge, and these skills most efficiently and effectively?

10. The maintenance of effective intra-departmental communications will become an increasingly serious problem for many geography departments as they grow in size. Only a decade or so ago a department with a staff of ten and a few score students was considered large; today the department with a staff of fifteen to twenty, and a hundred or more major students, is not at all unusual. Many departments need to start thinking about how they will handle problems of departmental structure and communications as they grow beyond the size where close personal contact and face-to-face communications are possible.

# UNDERGRADUATE GEOGRAPHY AT DARTMOUTH COLLEGE: AN UNDERGRADUATE LIBERAL ARTS INSTITUTION

**Robert E. Huke, Chairman**

## The Institutional Setting

Dartmouth College is committed to the liberal arts ideal. This ideal, in practice at Dartmouth, means very simply the acquisition of knowledge and understanding in the areas of learning common to all human activity, and the freedom to explore, to test, to demolish, to create, and as the student matures intellectually, to select. With such a background the student may elect specialized advanced study or some other career choice with confidence.

More than seventy percent of Dartmouth's graduating classes go on to specialized advanced study, a fact of contemporary academic life that reinforces Dartmouth's belief that what comes before the specialization is all-important. For this reason, Dartmouth has based the requirements for its Bachelor of Arts degree on a conviction that undergraduate study should lead to a widening rather than a narrowing of intellectual horizons. Dartmouth's standards are high, but they are within the capabilities of the able undergraduate student.

Geography has been taught at Dartmouth since 1901, when the Social Sciences Division had three courses: Geography, Government, and Sociology. This may be one of the longest records of any college in the United States. In the 1920's an M. A. degree in economic geography was offered in the School of Business Administration, and a course in economic geography was a prerequisite for Economics 1. During the same period the Department of Geology and Geography was offering several courses in physical geography. This department was shifted to straight geology in the early 1930's and geography was moved to the Department of Economics. The Department of Geography was established in 1941, and graduated its first major in 1943. It has grown constantly since that year.

Distributive requirements:—The course of instruction regularly extends over four years, of which the student is required to spend at least two, including the final year, in residence. By exception, seniors enrolled in the Dartmouth Foreign Study Plan may be absent during the first term of the final year.

Dartmouth operates on a trimester basis, with three trimesters each of 10 weeks duration during the regular school year. Each student takes only 3 courses per trimester, or 9 in a regular school year. The standard number of class hours per course is 40, which may be accomplished with two 2 hour sessions per week, three 65 minute classes per week, or four 50 minute class periods per week.

To qualify for the A. B. degree a student must fulfill the following requirements:

I. He must complete 36 courses

II. He must pass the following courses:

A. Freshman English, in the first or second term of his freshman year.

B. Freshman Seminar, with Freshman English as a prerequisite, which is designed to further his proficiency in writing and to provide him with an opportunity to participate in small group study and discussions with an instructor on a subject of mutual interest.

C. Three courses in a foreign language, or demonstration of equivalent proficiency at the college level. He must demonstrate his ability to read representative texts with understanding, and in the case of a modern foreign language, to understand and use it in simple spoken conversations.

D. At least four courses each from the Humanities, the Sciences, and the Social Sciences. In the division of his major subject he must include at least four courses outside his department of greatest concentration.

III. He must complete the Physical Education program and demonstrate proficiency in swimming.

IV. He must complete a major program (usually consisting of eight courses and a program of independent reading), which is established in conference with the chairman of the major department in the spring of his sophomore year.

Staff and facilities:—In the Fall of 1967 the department, which is in the social science division, had 50 undergraduate majors and a staff of 6. One of the important reasons for the success of Dartmouth's geography program, and other programs as well, is truly excellent library facilities. Baker Library and the several departmental collections have a total holding of some 935,000 volumes. Holdings in geography and related disciplines are excellent.

The library is operated on an open stack system so that all materials are readily available to faculty, graduate students, and undergraduates alike. Of special note are the serial holdings, of which over 10,000 are currently received, including a wide range in the field of geography. In addition, Dartmouth has one of the largest and most functional map and atlas collections in the United States. This collection is truly a great asset to the success of the department of geography.

We also have direct access, day or night, to the Dartmouth - GE computer through a teletype console located in the department. This facility is available to all faculty and students without charge.

## The Major Program

The major program is planned as a unified, coherent whole, not as a series of unrelated courses. In his senior year the student's time which would ordinarily be assigned to course work may be devoted to special work prescribed by the department. This may consist of independent research papers, intensive reading programs guided by an individual faculty member, or other activities which the department deems best adapted to the requirements of the student.

The department has an Honors Program which requires work that is clearly greater in depth and scope than that expected in the normal major program. The requirements for the Honors Program include a thesis, an oral examination on the thesis, and a special reading program related to the field of investigation covered by the thesis. Honors students are required to present material in at least one class meeting of the introductory course.

Requirements:—The ordinary major in geography consists of eight courses in addition to the prerequisites and an independent reading program in the junior and senior years. The first two courses of the major, which are normally completed in the freshman or sophomore year, are a course in introductory human and economic geography and a course in introductory physical geography. Prospective majors are encouraged to include introductory economics and introductory earth science among their distributive requirements.

The specific course requirements for the major include:

I. One course in Introduction to Advanced Geographic Study, which is taken in the winter term of the junior year.

II. Three systematic or topical courses.

III. One course in regional geography.

IV. One research or seminar course.

V. Two courses from one of the groups below:

A. For majors oriented toward economic geography: specified courses in economics, government, history, or statistics.

B. For majors oriented toward human-cultural or regional geography: specified courses in anthropology, government, sociology, or statistics.

C. For majors oriented toward physical geography and the earth sciences: specified courses in biology, earth sciences, and statistics.

It should be noted that all majors are urged to take one course in statistics in fulfilling this requirement.

Individual required courses:—Although the title printed in the College catalog is Introductory Human and Economic Geography, the actual first course taught might better be described as Introduction to Geography. It has short units of five or six class meetings on each of several branches of geography such as population, climatology, agriculture, urban geography, and manufacturing. The object is to demonstrate the kinds of contribution that each of these branches can make in answering key world problems. One central problem often attacked by the course is: "Can the world continue to feed a rapidly growing population?" In each unit a question is posed and problem solving techniques are used to answer it. Each of the questions is directly related to the main theme of the course. A course such as this is more difficult to organize than is a straightforward introductory course because, among other reasons, there is no appropriate textbook. Nevertheless, the course has had a favorable reception, and it serves as a good introduction to geography. The student reaction to the course is indicated by the fact that ten percent of those who have taken it stay to become majors in the department.

The Freshman Seminar in the Geography of Hunger examines the problem of overpopulation. Initial sessions are concerned with general theories of population growth and food supply, while the later sessions are concerned with specific world regions and their attempts to solve the problem. The course involves the writing of one long and three short papers, and reading in the works of such authors as Thomas Malthus, Julian Huxley, Frederick Osborn, and Georg Borgstrom.

The course in Introductory Physical Geography is focused on the physical aspects of the world. The properties of the globe and its representation in the form of maps are treated in detail. Study of physical landform development, such as the work of streams, ice, oceans, and winds, and an analysis of weather elements, are followed by an elementary treatment of soils and vegetation to illustrate the interrelationships of the natural environment. One class per week is used as a laboratory period.

The course in Introduction to Advanced Geographic Study is designed to introduce students to the fundamental nature of the field of geography. Emphasis is placed upon contemporary geographic methodology and concepts, research techniques, and source materials. This course, which is taken in the middle term of the junior year, also gives major students a chance to get acquainted with each other, and helps to build departmental esprit de corps.

Additional courses:—The department also offers six regional courses, five topical courses, and seven advanced research, seminar, and reading courses. Courses are offered on the regional geography of Asia, Europe and the Mediterranean, Latin America, the United States and Canada, the Soviet Union, and Africa. The subjects covered in topical courses are Field Techniques and Industrial Case Studies, Cartography, Commercial and Industrial Geography, Climatology, Urban Geography, and Terrain Imagery. The advanced courses include an Advanced Reading Course, a Senior Thesis, and research/seminar courses in Latin America, Plant and Industrial Locations, Oceanography, and Southeast Asia.

Faculty involvement:—The normal teaching load at Dartmouth is five 3 semester hour courses per academic year, and College policy forbids a faculty member to teach two consecutive summers. All members of the faculty teach courses at all levels. The most common class size is 18 to 20 students, and it is the policy of the department to limit all classes to a maximum of 40 to 45.

All major decisions concerning the policy and program of the department are made by the entire staff, and instructors have exactly the same voice and vote as full professors.

## The Undergraduate Major as an Institution

Recruiting:—The question of how to attract a fair number of excellent students to the geography major has been the most perplexing problem faced by the staff. A high proportion of Dartmouth students arrive on the campus either with no thoughts at all about geography as a discipline or, more frequently, with a set of negative preconceptions developed during the ninth or tenth grade.

Experience has shown that an introductory course with considerable intellectual challenge, a heavy and varied reading program, and fair grading, is more effective in attracting the better students than is a course with the reputation of being easy. We have not yet found a single text adequate to the challenge; thus a combination of several texts along with articles from the professional literature are used in the introductory offering.

Perhaps the strongest attraction to the department for many students is the fact that all members of the staff work in their offices and are available to students at almost any time. Students are urged to take advantage of faculty availability and are made to feel genuinely welcome. Many take advantage of the opportunity, some abuse the privilege, and others seldom venture into an office. Such extensive student contact cuts seriously into the time available for faculty research, but the rewards are gratifying.

In the introductory course the final lecture is often devoted to a topic such as "Whither Geography." The liberal arts nature of the Dartmouth geography major is discussed; opportunities for graduate work and financial aid are explained; some of the job opportunities available to geographers are outlined. We sometimes feel that this is rather blatant advertising but find that many of the students appreciate knowing something about the professional opportunities in the field.

The basic problem at Dartmouth, and probably at many other schools, is trying to get the good student to freely elect his first course in the discipline. Many potential scholars hesitate to choose a course in geography either because they know little about the field or have had a bad experience with "geography" early in their educational experience. One of the important objectives of the Dartmouth Geography faculty is to achieve a broad

exposure to help overcome the students' negative attitude toward the discipline.

Our success in achieving this exposure is demonstrated by the fact that one student out of three in the entire college takes the introductory course in geography. All of these students elect the course freely – no one is forced into the courst against his will. Roughly thirty percent of all the students who complete the introductory course take at least one other course in the department and ten percent of those enrolled in Geography I became majors.

Once a student declares a major in Geography he is assigned an advisor. Student and advisor work closely over the period of the Junior and Senior years to assure that the program elected comes as close as possible to preparing the student for whatever he plans to do following graduation. During the first months of the final year each student talks with his advisor about graduate work and financial aid.

Contacts:–Five days each week the department has a very informal coffee hour for staff and students, which is held in a seminar room and is open to anyone. This tradition helps to build student-faculty relationships.

Each spring we invite all majors and potential majors to a steak cookout and picnic. Students buy the food and the Department buys all the beer the students can drink. Faculty and students join in baseball, soccer, beer drinking and story telling. During the fall term one of the courses goes on a two day field trip to the top of Mt. Washington (via Cog R.R.) and the College Grant (a 27,000 acre wilderness area at the junction of Maine, New Hampshire and Quebec). Again students and faculty have the opportunity to get to know each other well.

Two members of the geography faculty are advisors to fraternities on campus and two act as freshman advisors. Each of these activities further increases the exposure of the department to undergraduates and each helps to attract a few scholars to the discipline.

The College's computer runs on a time sharing system which allows several remote stations to operate simultaneously. One console is in the geography department, and finds very frequent use. This attracts some non-geographers to our location, encourages student-faculty contacts, and occasionally leads to converting a math or government major to geography. Several geography developed programs such as KOPPEN and THORNTHWAITE are in the computer library and are available for general student use.

The department has recently begun publication of a series of monographs called Geography Publications at Dartmouth. These are edited and issued from our offices. The series has gained considerable publicity on the campus and has given work and experience to several of our majors. For example, one student was supported for the better part of an entire school year developing the maps in Rainfall in Burma, and several students were paid to work for shorter periods on the Bibliography of Urban Geography. The series, together with other faculty projects, has provided the opportunity for direct student involvement in on-going research and has developed considerable interest on the part of a number of excellent undergraduates.

## Results of the Program

Dartmouth's Department of Geography graduated 29 majors in the Class of 1967. Ten of these went directly into graduate work in geography,

and seven went into other graduate programs to work toward degrees in law, medicine, planning, or business. Two went straight into business, one into teaching, five to various branches of the armed forces, and four were still undecided when last heard from. If previous classes are any indication, at least three of the five men going into the service will enter graduate programs of one kind or another after they complete their military duty.

The Class of 1967 has placed more men in geography graduate programs than any single previous class. One year earlier the same statement could have been made concerning the Class of 1966. In fact during the past 15 years this department has sent a varying but gradually increasing number of promising students into the field. In part this is the result of having one or more members of the staff whose special duty it has been to discuss graduate school opportunities with each of the majors individually.

In June of 1967 the twenty-nine graduates of the department were offered 8 NDEA fellowships, out of a total of only 28 offered to the entire graduating class. One year earlier the figures were almost the same. Thus, for two years running geography majors have been offered a higher proportion of these much coveted grants than have majors of any other department on campus. This record has been impressive to undergraduates and administrative staff alike.

## Whither the Department?

The Geography Department at Dartmouth provides both a major program and a significant service function to a variety of other departments. An example of the service function is provided by the International Relations program, which requires at least one regional geography course of all of its majors. Students whose major interest is in Urban Studies almost always find their way into the urban geography course, and often take courses in economic geography and industrial location as well. Many students in government, history, and language and literature find that a regional geography course is of great value and interest. Science majors find courses in physical geography, oceanography, climatology, and cartography are valuable assets in their education.

A study of enrollment in geography courses above the level of the basic introductory course shows that roughly 55 percent of the students are majoring in disciplines other than geography. It is clear that the service function is important indeed.

The teaching staff of the department has been gradually increased over the past several years. With each increase the entire major program is reviewed and changes designed to strengthen the offerings are made. At the present time the department is attempting to introduce more quantification and computer work at several levels.

Already we have begun to use Computer Assisted Instruction on a modest scale. Students in a variety of courses are encouraged to make use of the computer facilities and to develop their own programs to assist in research projects. In this attempt we have had fair success because almost all Dartmouth students are introduced to programming during the freshman and sophomore years.

Recently the department has acquired the software necessary to implement SYNAGRAPHIC COMPUTER MAPPING. Within the next few months we expect to introduce this technique to several courses.

Dartmouth is now, and has always been, chiefly an undergraduate liberal arts institution. In recent years, however, a number of departments,

courses and carefully choose electives from the earth sciences. Students taking either of these two concentrations may enter into geography at the graduate level. Thirdly, the student may elect a newly developed Urban/Regional Planning curriculum designed to train sub-professional planners who will enter planning technician jobs, or who will go to graduate school before achieving the status of planner.

These five different patterns of course selection provide adequate flexibility for a wide variety of student interest, which is a definite asset in attracting majors.

Teacher training:—The teacher of geography in the elementary and secondary schools must be qualified to make use of the many and varied methods, media, materials, and techniques of modern geography. These differ widely in kind and in use from those used in the other social studies, and they require special instruction if they are to be used effectively. This special instruction is accomplished through the Teaching of Geography course. The objective of this course is to study modern geographic methods, techniques, and new materials. Students practice the use of learning resources as related to the teaching of substantive content.

Cognate areas:—Major students in geography are advised and encouraged to take courses outside the department as a part of their free electives. These courses may be either social science, physical science, or math oriented toward the particular student's concentration. Those students who wish to enter government service are advised to take Algebra and Trig.; those seeking earth science employment are strongly advised to take geology and other physical sciences; those taking Urban/Regional Planning are advised to take additional courses in Economics, Sociology, Political Science, Art, Business, and others.

Faculty involvement:—The normal faculty load for undergraduate instruction is 12 semester hours, 14 contact hours, or 140 students. General education courses are limited to 45 students, advanced courses which service other departments to 35, and those which serve only geography majors to 25.

All faculty members are involved in every aspect of departmental decision-making and instruction, and departmental policy has always been determined by the entire geography staff. No staff member teaches exclusively in the graduate school, but a few teach only at the undergraduate level.

The only conceptual frame of reference which relates to all courses is the goal of achieving a well balanced geography student. Some faculty members stress "scientific" facts and information, whereas others dote on teaching "concepts;" students achieve about as well with one group as with the other. Some staff members wish to increase physical geography, others would increase cultural geography, and still another group wishes to stress methodology and quantitative geography.

Thus far we have managed to maintain a middle course between these various points of view. Since we have not yet cornered "The Truth," we do not know which of the various teaching strategies is better or best, and thus we offer a variety of courses and a variety of instructors offering a variety of frames of reference. We encourage the student to select a variety of courses, instructors, and frames of reference.

## The Undergraduate Major as an Institution

Recruiting:—Several efforts are exerted toward obtaining majors. The faculty are sold on the discipline and its merits. The enthusiasm with

which they present their subject and their belief in its usefulness is our greatest recruiting asset.

Every staff member maintains an open door policy. We are known throughout the university as being student centered, and students feel free to come to us for all kinds of advice, knowing that they will be listened to.

When students of high caliber are discovered in any geography course, faculty members are encouraged to advise them of their special abilities in geography, and to tell them of the opportunities open to them in this field.

The Geographical Society, which has been student operated and student centered with faculty advice, has been one of the most active of all college clubs during the last ten years. Once each month the Society holds a seminar, "Conversations in Geography," at which refreshments are served. Students and faculty from the entire university feel free to come. Thirty to forty students and faculty members discuss some part of the world at each session. Gamma Theta Upsilon attracts the superior student.

Extended field trips, which are open to students other than geography majors, have been an important builder of faculty-student rapport. Students appreciate the fact that some faculty members are willing to give up their Thanksgiving or other vacation periods to join them on major field trips.

Before 1960 no students entered the department as freshmen, and all majors were transfer students from other curricula. During the 1965-66 and 1966-67 academic years ten students entered the geography department each year as freshman geography majors, and in 1967-68 eleven enrolled as geography majors in their freshman year. This is probably the result of the large number of graduates of the department who have done exciting jobs of teaching modern geography in secondary schools in the university's service area. Although no formal machinery exists for maintaining contact with graduates of the department, there is continuing contact with those who return summer after summer for several years to work toward the M.A. degree.

Advising:—In the past advising has been carried out on a rotational basis. A faculty member was assigned to the freshmen majors and remained with the class until the senior year. Transfer students simply joined the particular class. All seniors in Education were advised by the geographic education specialist, because each was engaged in student teaching during one semester of his senior year. All Arts and Sciences students were advised by a separate faculty member.

The entire advising system was changed in the fall of 1967. Geography majors in Education are now advised by four faculty members, one for each class, and Arts and Sciences geography majors are assigned to one of several advisors depending upon their concentration and their alphabetical arrangement. Two advisors are responsible for each of these three areas of concentration: earth science/physical geography, urban/regional planning, and general geography.

Advising includes personal, professional, vocational, and/or program advice and approval. Advisors check academic progress in all subjects at mid-semester and help obtain tutors if needed. The geographic education specialist visits all student teachers and advises both with the supervising teacher and the student teacher.

Contacts:—Student faculty contacts in the classroom, in advising situations, on field trips, and in the two student geography organizations have been discussed above. The monthly coffee-seminar called "Conversations in Geography" usually has a ten to fifteen minute presentation by a foreign student or a faculty member, followed by a forty-five minute question and

answer period. It has attracted students and faculty members from other departments, as well as geography majors and faculty members.

In the early fall an informal get-together is held at the college lodge so new students can become acquainted with other geography majors and the faculty. An annual banquet is held jointly by the departmental staff, the Geographical Society, and Gamma Theta Upsilon. This is normally attended by 70-80 students and faculty members. At this banquet an award is made to the "Geographer of the Year," the senior who has displayed outstanding academic, professional, and personal achievement during his time at the university.

Student teachers receive individual and personal attention during the entire semester they are teaching through observation, conferences, and seminars. Each semester the student teachers, supervisors, faculty members, and junior majors participate in a tea and seminar for discussion of the teaching of geography in the secondary schools.

The cartography laboratory is always open, and students congregate here to work and exchange ideas. The geography reading room is being developed as a place where students and faculty members may meet informally to enjoy coffee and to get better acquainted. Students and faculty members also converse frequently in coffee shops near the university.

## The Results of the Program

Before the 1964-65 academic year approximately 90 percent of all geography majors were destined for jobs in secondary education, while 10 percent entered graduate school, higher education teaching, or urban/regional planning. Since 1965 the percentage of undergraduates entering the geographic education curriculum has declined to approximately 50 percent, with a proportional gain in the numbers of those going into cartography, urban/regional planning, state department work, and various other vocations. Forty percent of the curriculum transfer students into the department in 1967 entered the urban/regional planning segment of the curriculum.

Some students, particularly Liberal Arts majors, enter the department without any real vocational objective. They simply want a degree and take the line of greatest interest or least resistance. These majors have taken jobs as salesmen, managers, politicians, morticians, lawyers, realtors, etc., or have become housewives. Others, in Geographic Education, have taken geography as an academic area, but their main interest has been athletics; these have generally become couches.

Vocational goals, as indicated by the actual jobs now held by students who have graduated during the last ten years, are: secondary school geography teacher, 85%; secondary school athletic coach, 5%; urban/regional planner, 5%; college geography teacher, 2%; elementary school teacher, 1%; cartographer, 1%; and miscellaneous, 1%.

## "Whither the Department?"

During the past twelve years the goal of this department has been: "to become the best geography education department in the nation." All our efforts have been toward that end. This required that we develop a highly successful "Teaching of Geography" laboratory for development of methods, materials and techniques. This goal also required that we develop a well grounded program of substantive courses to develop the student in knowledge and understanding of geography. In addition, our goal required that our

department become known nationally. This national recognition could only be achieved through faculty participation in national conferences and in publication as well as outstanding participation of students of our institution at conferences and in graduate programs of other institutions.

At present we are in the throes of change to a university. Our students are now approximately fifty percent liberal arts rather than totally education majors. This change requires a reorientation of our goals and objectives. Emphasis has swung strongly to Urban/Regional Planning with fifty percent of Arts and Science majors in this concentration.

It appears that we will slowly give greater emphasis to graduate work as we have now offered the Master of Education, Arts, and Science Degrees for several years. There is pressure to offer the Doctorate. There will probably be little change in the undergraduate curriculum due to the fact that it has evolved out of ten years of deliberations and the staff will remain relatively stable. The greatest change will be a slow shift to systematic courses in addition to regional emphasis.

# UNDERGRADUATE GEOGRAPHY AT SAN FERNANDO VALLEY STATE COLLEGE: A LARGE, RAPIDLY GROWING INSTITUTION WITH A LARGE INTAKE OF JUNIOR COLLEGE STUDENTS

**Stanley H. Ross, Chairman**

## The Institutional Setting

San Fernando Valley State is one of the eighteen campuses of a California State College complex of 8,000 faculty and 157,000 students. Ten of these colleges have been developed since 1947 and several new ones are currently in the planning stage, but the oldest campuses go back a century. The primary responsibility of each faculty within the system is the instructional process on the teacher-student level, with appropriate recognition of the necessary and constructive role of research in the intellectual community.

San Fernando Valley State was first established on the present site in temporary structures ten years ago and has offered geography courses since its beginning. Rapid growth was instantaneous, as most of the population increase in Los Angeles during the post war period occurred within the San Fernando Valley, and particularly within the western half, where the college is located. Today the college draws primarily upon the one million residents of the valley for its students, but the other six million residents of Los Angeles County, coupled with the additional four million Southern Californians outside the county, provide a vast population pool for educational growth.

As a result of newness and rapid growth, general statements about the institution are difficult to make. Attempts at generalization are further complicated by rapid turnover in the groups responsible for policy formation at the department, school, and college level. In addition, in all years since the inception of the college, non-tenured faculty have outnumbered the tenured ones. Counterbalancing this to a certain extent has been the stabilizing influence of the Junior College structure of California's higher education. These colleges provide the bulk of the first two years of higher education in California, sending their graduates on to the universities and colleges for upper division work. Most institutional restrictions are modified to allow transfer students to graduate without loss of credit or time.

The state colleges have as their goal sixty percent of undergraduate instruction in the upper division. San Fernando Valley State accepts students who have graduated in the top third of the California High Schools, or who have completed two years of Junior College. Predictability of success, either through High School grades and national test scores, or success at another institution, are the main determinants for entrance.

Distributive requirements:–Institutional restrictions are not of a specific nature. The undergraduate program is centered on a core of liberal education. The distributive requirements for general education constitute about a third of the program, the major requirements are another third, and electives provide the remainder. Within the general education requirements there are many choices, and the same is true of requirements within the major.

At least 124 semester hours, including 40 in the upper division, are required for the B.A. degree; a minimum of 24 semester hours must be earned in residence, including 12 of the last 20 counted toward the degree.

including all of the sciences, have developed doctoral programs. It is clear that within the next few years the Geography Department, as all others, will be involved in graduate training of some kind. Whether this involvement will take the form of a doctoral program in geography, or close ties with a variety of interdisciplinary programs, such as Russian Studies and Urban Studies, is not yet clear.

The Dartmouth staff is unanimous in its wish to maintain, indeed to continue to improve and strengthen, what it feels is a solid and respected undergraduate program. But the question has been raised, "Can an excellent undergraduate program and a strong doctoral program both be supported by a small college with limited resources?" Graduate students occupy a great deal of faculty time, which must be borrowed from elsewhere, and it seems clear that the undergraduates must suffer. On the other hand, powerful arguments in favor of doctoral programs have been presented in dozens of reports, and are too well known to warrant repetition.

Within a few years the Geography Department at Dartmouth will offer graduate work. The number of degree candidates at any one time will be limited. One of the chief objectives will be to provide innovations in the graduate program which will not only strengthen it, but will also add to the prestige and quality of both the undergraduate major and the service function of the department. This is a big order, but the staff of the department feels that it can be done.

It is the present opinion of the Dartmouth staff that the undergraduate aspects of our operation must continue to be our chief focus of attention. At the same time faculty and administration alike realize that, for a variety of economic and intellectual reasons, increasing attention must be placed on the development of outstanding graduate programs. The major problem of this department is to produce a viable amalgam from two apparently disparate concepts!

# UNDERGRADUATE GEOGRAPHY AT THE INDIANA UNIVERSITY OF PENNSYLVANIA: A FORMER TEACHERS' COLLEGE

**Thomas G. Gault, Chairman**

## The Institutional Setting

Indiana University of Pennsylvania is the state's only state-owned and state-controlled university. It is a multi-purpose institution composed of six schools: School of Arts and Sciences, School of Education, School of Fine Arts, School of Home Economics, School of Business, and the Graduate School.

The University has been evolving new and ever enlarging functions. It began in 1871 as Indiana Normal School and became a degree granting institution in 1927 as Indiana State Teachers College. Becoming a State College in 1960, the college added the School of Liberal Arts and the Graduate School. The college was elevated to University status in 1965.

The changing function of the college has been reflected in the ever evolving curricula of the institution. The curriculum changes have required constant vigilance on the part of the Geography Department to maintain a role in the General Education of the institution. Major general education curriculum changes took place recently, in 1959, 1963 and 1967. All of these changes left the place of geography in general education relatively intact.

The number of Geography majors and the number of faculty for the Geography Department have more than kept pace with the growth of the University. Since 1956 the University has increased its student body from 2,000 to 8,000, and the staff has increased from 125 to 400. Geography majors have increased from 19 in 1956 to 150 in 1967, and the staff has grown from 3 to 15.

Distributive requirements:—The geography program must function within the university curriculum structure, which requires 124 semester hours for graduation. Students are required to take 19 to 22 semester hours in the humanities, 11 to 14 semester hours in the natural sciences, 15 semester hours in the social sciences, 4 semester hours in ROTC or Physical Education and Health, 27 to 36 semester hours in a major field, 15 to 21 semester hours in a minor field, and have 12 to 15 semester hours of free electives.

Facilities:—The department, which is located on the ground floor of a relatively new building, is well equipped. Three lecture rooms seating 45 students each are provided with such audio-visual aids as wall maps, globes, models, and a variety of projectors. The 14 table cartography laboratory and the physical geography lecture-laboratory have all the appropriate equipment. A specially designed "Teaching of Geography" laboratory, which is constantly being updated, is one of the most complete and up-to-date in the country, if not in the entire world. The Geography Reading Room has a good collection of current professional journals, books, and atlases dealing with geography, urban and regional planning, and aerospace science; it also serves as a central location where major students can meet informally.

## The Major Program

Requirements:—Between 1956 and 1967 the curriculum in geography has changed radically from a largely unstructured program for prospective teachers to a tightly structured program which serves students in the

School of Liberal Arts as well as students in the School of Education. In 1956 all geography courses were grouped into three categories: earth studies, economic geography, and regional studies. The only requirement for a major in geography was one course from each category within a 24 semester hour major, in addition to a course in "Teaching of Geography." The 1961 revision required all majors to obtain 30 semester hours including 3 to 6 hours of geography in general education, 3 hours of economic geography, 6 hours of earth science, and 12 hours of regional geography. "Teaching of Geography" continued as a part of the professional education requirement.

In 1963, when the School of Liberal Arts curriculum was introduced, and a major in geography could be obtained either in Liberal Arts or in Education, the major was changed drastically to provide a broad systematic background for students in either school. By far the largest proportion of the Education graduates of the department become teachers in the secondary schools of the University's service area. Most of them are expected to teach regional geography, and as preparation, Education students are strongly encouraged to take most of their elective hours in the department in regional courses; Liberal Arts students may take either regional or systematic courses, according to their interests.

It was soon discovered that an inordinate amount of time in upper level systematic and regional courses had to be devoted to topics which might better have been covered once and for all in lower level courses, and so all geography majors, whether in Education or in Liberal Arts, are required to take the following core of six 3 hour courses as part of the 30 hour major: physical geography, cultural geography, physiography, economic geography, climatology, and the geography of Anglo-America. The Liberal Arts major concentrating in any social science, of which geography was one, was additionally required to complete 6 hours of specified courses in economics, history, political science, psychology, and sociology.

In 1965, when university status was achieved, a new curriculum was initiated to become effective in 1967. A 3 hour course in Geographic Thought was added to the geography requirements, and 35 semester hours of geography were required for a major, but the number of required hours in other social sciences was dropped to 15, and they were made freely elective. The new curriculum gives a wider range for student interest and choice to work toward vocational goals.

A minor in geography consists of five 3 semester hour courses: one each in introductory geography and in cultural or economic geography, plus an elected course in physical geography, in human systematic geography, and in regional geography.

Individual required courses:—Physical geography introduces the natural factors of the landscape as studied by the geographer: weather, climate, soils, rocks, minerals, structure of the earth's crust, and the oceans; and the tools of geography: globes, maps, and aerial photographs.

Cultural geography deals with geographical aspects of population, settlement, ethnogeography, and the cultural landscape. The relationships of various ethnic and cultural groups to the natural environment are considered, and students are acquainted with the tools, philosophy, and literature of cultural geography and related disciplines.

Physiography, which follows physical geography, studies the form of the earth's crust and its associated water bodies; the classification, distribution, and processes involved in their geomorphological development; and the effect upon the human landscape.

The course in economic geography is designed to promote geographic and economic concepts, methods, and skills pertinent to the understanding of the spatial variation of production, consumption, and exchange over the earth's surface.

The course in meterology is an introduction to meteorological sciences, and treats the composition and structure of the atmosphere; radiation principles; elementary thermodynamics and heat balance; cloud physics; meridional, zonal, and tertiary circulations; air masses; fronts, and storm structure; common instruments; and elementary weather map reading and forecasting techniques.

The climatology course, which treats physical aspects of climatology, covers the heat and water budget; climatic classification systems; paleoclimates; regional climates of the continents; selected microclimates; climatic change in space and time; and statistical and mathematical models.

The geography of Anglo-America course is a regional study of the United States and Canada which is concerned with man's adjustment to his environment as influenced by the physical factors of climate, vegetation, relief, soils, and natural resources as well as recognition of cultural adjustments to the geographic environment and the interrelations between the two countries and the rest of the world.

The course in geographic thought and philosophy is a seminar limited to senior and graduate majors and minors in geography. Emphasis is upon individual study, research, and written and oral presentation of geographic data.

The course in the teaching of geography in secondary schools is required of all geography education majors. The major objectives are the study of modern methods and techniques of teaching geography and geographic materials, and of current curricula in geography. Emphasis is placed upon the contribution of the discipline to the understanding of national and world problems.

Additional courses:—In addition to the required courses described above, the department offers courses in earth and space science, weather and climate, composition and structure of the earth's crust, advanced meteorology, oceanography, conservation and resource use, aerospace science, world geography, geographic influences in history, trade and transportation, political geography, world problems in geography, urban and regional planning, cartography, field techniques in earth and space science, field techniques in geography, regional field studies, honors, high honors, the teaching of world cultures, and courses in the regional geography of Pennsylvania, Europe, the U. S. S. R., the Far East, South and Southeast Asia, North Africa and Southwest Asia, South America, Middle America, Africa south of the Sahara, Australia and the Pacific Islands, and the Polar Regions.

Concentration areas:—The two major curricula in geography are in Geographic Education, for training secondary school teachers, and in Liberal Arts Geography, for those interested in other professional aspects of the discipline.

Within the Geographic Education curriculum the student may concentrate in general geography with emphasis on regional studies as preparation for teaching in the social science departments of the secondary schools, or he may concentrate on the earth sciences as preparation for teaching natural science in the secondary schools.

The School of Arts and Sciences offers the geography student the opportunity to concentrate in general geography with a wide selection of courses, or he may choose his courses from the physical geography

Each student is required to take 12 hours in the social sciences, 9 in the natural sciences, 9 in the humanities, 6 in rhetoric, 3 in psychology, 4 in health and physical education, and 3 in modern foreign languages or mathematics. Geography is included in both the natural and the social sciences.

Facilities:—In the Fall of 1967 the department had 20 full time staff positions, 5 graduate student assistants, 65 graduate students, and 185 undergraduate majors. It is well equipped, the result of strong administrative support and extremely capable departmental leadership in the initial years. In preparing to move into present quarters in 1963-64, a carefully prepared set of plans was approved, which allowed four years of capital outlay monies to equip the new building. An extensive map library (currently 150,000 flat maps), climatological equipment including automated recording and storage equipment, and rather elaborate cartographic photographic and printing equipment were provided. The department has used a specialization (based on staff expertise) in climatology, cartography, urban geography, and historical geography as a means of obtaining equipment support even though active research and teaching is also significant in other areas. The future purchase of equipment appears to be modest, as are the needs. If in the next ten years significantly large acquisitions are deemed necessary, it is anticipated that the department would move to a newly constructed building, again participating in four years of capital outlay to equip the structure.

## The Major Program

Requirements:—The student majoring in geography is required to take lower division courses totalling 4 semester hours of physical geography (including 1 hour of laboratory), 3 semester hours of weather, 3 semester hours of elementary mapping, and 3 semester hours of either economic or cultural geography. These courses are part of an interchangeable package of general education courses which may be transferred from a junior college or taken on campus. Ideally a student enters the upper division having had beginning physical and cultural geography and a weather course. His concentrated work begins with training in maps and graphics, and a course in advanced cultural geography.

In the upper division a student is required to take 3 semester hours of advanced cultural geography, a 3 semester hour proseminar, 24 semester hours of approved upper division electives in geography, and 6 semester hours of approved electives in fields outside geography. As part of his approved upper division electives in geography the student may take 3 hour courses in meteorology and in maps and graphics, if he had failed to fulfill those requirements by taking the lower division courses. In general, the upper division student follows a very flexible curriculum based on approved electives and the extremely wide range of course offerings.

In addition to the core of upper division courses, the large number of electives allows a multiple track system for the undergraduate major, who may concentrate on earth science, climatology, urban studies (a program offered in conjunction with the Departments of Economics, Political Science, and Sociology), or any combination of physical geography, cultural geography, and area studies.

A geography minor consists of 3 semester hours of physical geography and 3 semester hours of either economic or cultural geography in the lower division, plus 14 semester hours of approved upper division electives in geography.

Individual required courses:—The lower division course in physical geography is a study of the natural environment of man: the nature, dis-

tribution, and relationships of climate, landforms, vegetation, hydrography, and soils. The physical geography laboratory has observations, experiments, and procedures utilized by geographers. The course in weather, which has algebra as a prerequisite, is a study of atmospheric processes.

The economic geography course is a geographical analysis of world production, consumption, and trade. The course in cultural geography is a world regional analysis of cultural geography with emphasis on features important to the understanding of current problems. The elementary mapping course includes techniques of map reading, interpretation of maps and aerial photographs, and elementary map making.

The 3 hour upper division course in meteorology, which has calculus as a prerequisite, may be taken by students who did not have a course in weather in the lower division. It is a study of the static and dynamic properties of the atmosphere. Emphasis is placed upon water in vapor, liquid, and solid forms; radiation transmission, reflection, and absorption; thermodynamics and heat balance; weather observation, reports, and representation; and atmospheric motions and winds.

The course in maps and graphics, which may be taken by the student who did not have the lower division course in elementary mapping, is concerned with the design, preparation, and use of maps and graphs. The advanced cultural geography course is a study of the distribution of man on the earth and the way in which he occupies the land.

The proseminar, which provides a capstone for the undergraduate major, is an introduction to geographical research and writing through supervised field work and individual projects. It is currently offered on a tutorial basis, and the student completes the 3 unit requirement at the rate of 1 unit per semester for three semesters. Until recently all three units were completed in the last semester before graduation.

Additional courses:—In addition to the core of upper division courses, in the fall of 1967 the department offered fifteen topical courses, fifteen regional courses, and seven technique courses.

The topical courses are advanced physical geography, analysis of landforms, climatology, world climate, topoclimatology, hydroclimatology, advanced economic geography, industrial and commercial geography, the geography of population growth and food supply, transportation geography, urban geography, urban land use planning, settlement geography, urban historical geography, and political geography.

Courses are offered on the regional geography of California, Anglo-America, Middle America, South America, Europe, the Soviet Union, Eastern Asia, Southern Asia, the Middle East, Africa, and the Southwest Pacific. Courses are also offered on the historical geography of Europe, the Middle East, Anglo-America prior to 1800, and Anglo-America since 1800.

In the technique area courses are offered in quantitative geography, field studies, cartography, advanced cartography, photo interpretation, spatial analysis and comparisons, and geographic methodology.

Additional flexibility is provided through topics and tutorial courses. Topics taught in 1966-67 included the economic development of Africa, Water Resources, and the historical geography of Mexico. Conservation and Water Resources were offered in the fall semester, 1967, followed by three different topics during the Spring of 1968. When a topic has been repeated successfully, it is incorporated as a separate course with its own specific number in the catalogue. This will enable new courses to develop on a trial basis as well as the usual method of having them develop through individual faculty initiative.

Faculty involvement:—All members of the teaching faculty are involved in the undergraduate instructional program, although some are less involved than others because of graduate instructional duties or sponsored research. The average faculty member teaches one lower division and one upper division lecture course, a section of tutorials or thesis supervision, and completes his 12 "hour" teaching load with either a seminar, a repeat of a lower division course, or another upper division lecture. Faculty members teaching a graduate seminar have their teaching load reduced to nine hours, and some reductions in teaching loads are available for college representation in off campus affairs.

Both lower and upper division instruction is of the small group lecture discussion type, with individual classes programmed for 40 or fewer students. There is considerable deviation from the average teaching load, due to the rapid change within the departmental staff. Contact with about 125 students per semester, in either a lecture, tutorial, seminar, or thesis situation, is usual.

Changes have often been made in the undergraduate program. It was formerly more restrictive, but experience has shown that many of the options formerly presented are now automatically chosen by the student under the elective system. Changes are made as the result of departmental majority vote, and approval by the appropriate College committees.

Many less successful aspects of the program have been eliminated through change; not enough time has elapsed since the last change to indicate present deficiences. Field work at the freshman level was discarded as a requirement when most of the enrolled students were found to be at the upper division level. A regional course requirement was eliminated when it was discovered that most students took at least one regional course without having it required. Upper division work in advanced systematic geography and technique courses is strongly suggested through advising, and those planning to pursue further professional training appear to be electing such courses. Work in cognate fields is strongly advised, but the advice is often unheeded.

## The Undergraduate Major as an Institution

Recruiting:—A very few students have entered San Fernando as freshmen with a declared geography major, but those that do never seem to complete the program. Upper division students become majors as the result of taking a general education geography course. Most geography majors transfer into the institution from junior colleges with a declared geography undergraduate major. It should be noted that California has a vast junior college segment in higher education, and the presence of an efficient, highly trained, and strongly motivated geography faculty in these junior colleges provides a strong base for the four year institutions.

The college and the department conduct a day-long articulation conference each spring with geography faculty members from some of the junior colleges in the college's service area. A principal concern of the junior college representatives at this conference is to ensure that there should be no loss of transfer credit for the general education core courses of the lower division, many of which are taught in the junior colleges.

There is no appreciable difference in quality between junior college transfer students and those who have completed their lower division requirements at San Fernando. Ninety-nine (89%) of the 111 students who received the B.A. degree in Geography from the college between January 1963

and June 1967 transferred more than 10 semester hours from a junior college, university, out-of-state college, military, extension, or combination of these. Students transferred from eleven junior colleges in Southern California, but the great majority came from Los Angeles Valley Junior College (27 - 24%) and Los Angeles Pierce Junior College (26 - 23%). The junior college transfer student shows a higher average grade point average (GPA) in the upper division at San Fernando Valley State (2.60) than he had at the junior college level (2.45), although his total academic average (2.51) is slightly lower than the total average (2.53) of students who took all their course work at San Fernando. Females excelled academically and completed their degrees earlier with similar average GPA's in junior college and at San Fernando, but average male GPA's increased consistently with age and academic level.

The department makes a strong and concerted effort to maintain contact with faculty members in the junior colleges. Former graduate students in the department, who accepted junior college teaching positions upon receipt of their M.A. degrees, regularly return to the campus to attend the departmental lecture series, and they often bring their classes to look over such facilities as the map library and cartography laboratory. Members of the department also maintain liaison with other geographers by active participation in the affairs of the Los Angeles Geographical Society, the California Council for Geographic Education, and the Association of Pacific Coast Geographers.

Advising:—The advising of students is done by six members of the faculty as their direct responsibility, even though the other members help out on a casual basis. Many aspects of mandatory advising are now being relaxed by changes in college rules. Paradoxically, this should enable more student contact time with an adviser, particularly at a time and place that is perhaps more suitable than during the registration period. It is felt that long term advising rather than single semester program help is desirable.

Each student is required to obtain final advising just prior to his last semester. This may be his only mandatory contact since transferring into the geography program. Many of these advising procedures are being performed in the tutorial program, which is presently being expanded.

Student-faculty and student-student contacts:—Part of whatever success undergraduate education in geography at San Fernando has achieved is the result of active student-student and student-faculty contacts. There has been a student club, the Geography Council, which sponsors lectures, field trips, athletics and socials. It is run by the students, without faculty participation in policy but with invited faculty usually present. Informal student-student relationships center around coffee rooms, the cartography laboratory, and the climatology and calculator rooms.

Student-faculty contacts occur in both obvious and subtle ways, depending particularly on individual preference. Besides formal and informal office conferences, meetings take place during student socials, after departmental lectures, and at the occasional departmental socials. It is felt that having both departmental initiative and student initiated contacts strengthens both, and that little rapport occurs without activities that are student sponsored and controlled. Those field trips planned, organized, supported and conducted by students seem far more interesting to the participants than faculty sponsored ones.

Some of the less successful aspects of the undergraduate program center around the system of advising students, but it is believed that tutorials will correct this problem. Attempts to recruit and acknowledge the

superior student are also being discussed, but a satisfactory solution has not been found other than a continuance of individual faculty efforts. Faculty interest and participation is the prime contributing factor to the program.

## Results of the Program

The problems of having a new school, in which one third of all the Geography BA graduates from the department graduated in 1967, presents difficulties when analyzing results. Nevertheless, a survey was taken by mail to find out what the previous graduates were doing, and what their educational and/or vocational goals were. Forty-five persons, or more than half of the 1963-66 graduates, responded. Although this "voluntary sample" might be biassed in favor of those students who are oriented toward advanced study in geography, and against those who plan to remain in secondary school teaching, the results of the survey do show some tentative trends.

The majority of the graduates are either attending graduate school or expect to when their military service is completed. Most of these students have the MA or the Ph. D. degree as their goal, with only a few working on teaching credentials. Most of these advanced students are still in geography, although two have chosen planning and one entomology. They tend to remain in Southern California for their graduate work. Graduate school is also one of the main objectives of the undergraduate students presently in the Geography program.

Of those graduates of the department that have not chosen to pursue further education, about one third are public school teachers, and the rest are in business and industry or work with public agencies as planners or cartographers. Of those B.A. graduates who have also completed the M.A. at San Fernando, a third are teaching in California Junior Colleges, a third are in Ph. D. programs, and a third have taken professional positions in such areas as planning or forest research.

## Whither the Department?

In ten years the department has been built upon both the esprit of its members and the flexibility necessary for rapid growth. The one constant has been the dependence on a liberal arts base which serves as the foundation for our diverse geography program. The result has been not only rapid growth, but the attainment of a total size which is now large even in comparison with existing older institutions. The department has not been afraid of numbers, insisting that quality and quantity are not necessarily mutually exclusive. Whatever stability has existed within the department has come through dependence upon and expectation of constant growth. This is expected to continue for at least the next decade, and if the solid administrative backing of the last ten years continues, as anticipated, continued expansion should occur.

Geography enrollments have increased at an accelerating pace. During the last five years the college enrollment has doubled, while geography enrollments as a percent of the total have grown from 2.6 to 3.5. This has been the result of several factors, but a greater variety of offerings in general education, and the expansion of geography majors to 140 last year appear most important. Faculty positions to handle this growth are now at

twenty. Conservatively projecting the institution to double its present size by 1980, it is anticipated that geography student and faculty members will also double, provided that the faculty are convinced that quality is not being curtailed but is being upgraded.

It appears that a threshold was passed last year when the number of faculty members and students increased to the point where face to face communication ceased to be the means of ordinary interaction between all parties. Although many face to face meetings are necessary, more use of memos, bulletin boards, and other written messages has produced some problems. These will probably occur with about the same frequency regardless of further growth. Hopefully, the amount of direct personal contact between individuals will not decrease as the amount of written communication proliferates.

# UNDERGRADUATE GEOGRAPHY AT SOUTHERN ILLINOIS UNIVERSITY (CARBONDALE): AN INSTITUTION WITH AN EMERGING DOCTORAL PROGRAM

**Frank H. Thomas, Chairman**

## The Institutional Setting

The Geography Department at Southern Illinois University has devoted explicit attention to the development of a more effective undergraduate program at the same time that it has been strengthening its masters program and launching a doctoral program. The university, which has 18,000 largely non-commuter students, is located in a small city of about 25,000 people. The 14,000 undergraduate students are enrolled in eight colleges, of which the College of Liberal Arts and Sciences and the College of Education are the largest. The Geography Department is a unit of the College of Liberal Arts and Sciences, but close intercollege cooperation is maintained for the operation of such programs as the Bachelor of Science in Education with a geography major.

Distributive requirements:—The university's General Studies Program prescribes 84 of the total 192 quarter hours of credit required for the bachelor's degree, including 22 hours of physical and biological science, 22 hours of social science, 22 hours of music, art, and the humanities, and 18 hours of communication skills. In addition, a student in a Liberal Arts and Sciences program must have 64 senior level credits and reading competency in a foreign language.

The courses taught by the Geography Department at the freshman and sophomore levels are limited to the General Studies Program, and are not designed to prepare majors in geography. Because the requirements of this Program occupy the first two undergraduate years, and also because Junior Colleges are providing an increasing number of transfer students, the great majority of students enter the geography major program during their junior year, and the major program must be completed during the last two years of the undergraduate program.

Table 1.
Composition of the Undergraduate Clientele in Geography Programs 1966-67 Estimates

| Program and College | Hour Requirement in Geography | Percent of Students |
|---|---|---|
| College of Education | | 70 |
| Geography Major | 48 | 10 |
| Geography Minor | 27 | 10 |
| Social Studies - Major Field | 27 | 20 |
| Social Studies - Minor Field | 12 | 30 |
| Liberal Arts & Sciences | | 25 |
| Geography Major | 45 | 20 |
| Geography Minor | 27 | 5 |
| All other | | 5 |
| | | 100 |

A second major determinant of program structure is the clientele of the geography program. Each of the three undergraduate geography major programs, and their attendant minor programs, has a different set of objectives and requirements. The Social Studies program of the College of Education accounts for 50 percent of all majors and minors, and the combined programs of the College of Education account for 70 percent (Table 1). Thirty percent of the students (the Social Studies minors) are required to take only 12 hours of geography, yet these students expect to teach geography after they receive their degrees. What should be taught in these 12 hours as basic preparation for the prospective teacher? What are the minimum essential requirements which should be embodied in a 12 quarter hour package?

Facilities:—In the Fall of 1967 the Geography Department had a staff of 15, approximately 35 graduate student assistants, and about 40 full-fledged undergraduate majors. Specialized facilities to support the program of the department include a collection of 3,000 flat and 150 wall maps, a 20 station cartographic instructional laboratory, desk calculators, a cartographic research laboratory, and a climatological research laboratory. The university library, which is approaching a million volumes, has standing subscriptions to more than 130 professional journals in geography and related subjects.

The departmental program is influenced by the university's textbook rental system, which reduces educational costs for the student by permitting low cost rental instead of purchase of textbooks. For economic administration of this system, textbooks once selected must be used for three years before they can be changed. This hampers adoption of the latest textbooks, encourages instructors to assign supplementary readings and paperback books, and increases the amount of "handout" material.

Because of the textbook rental system, and in response to the needs of the future teacher going only through the core curriculum, a "workbook" of case studies and problems is being developed for each required course, with the object of drawing the student's mind through the process of geographic inquiry and reasoning, and the application of geographic concepts. Upon graduation and after receiving an initial teaching assignment, teachers with minimal preparation commonly turn to the first crutch available, notes and textbooks from their undergraduate courses. If each workbook effectively achieves its objective, it will do much to improve the teaching of geography at the pre-college level.

## The Major Problem

When the university's General Studies program was introduced in 1961, the department created a new undergraduate program which was based on the following key notions: (1) The concepts and content of geography can be reduced to a core curriculum which ensures a minimum necessary competence; (2) The core curriculum should be terminal for students in the 12 hour Social Studies program, yet it should also provide a basis on which to construct an undergraduate major program; (3) Each core course should balance concepts and theory, techniques and methods, viewpoint, and substantive material; (4) Each core course should be integrated with other core courses into an effective program to ensure the minimum necessary competence; a mere collection of courses does not constitute a program; (5) The objectives of each core course must be established by departmental decision, but each instructor would be encouraged to achieve these objectives

in his own way; (6) Instruction in each core course would be rotated among a specialist team of staff members, and each course would be offered every quarter; team teaching permits articulation of the core program despite leaves of absence or other personnel changes; (7) Core courses would be taught by senior as well as junior staff members; the senior staff must participate in the entire undergraduate program even though they may also be committed to the graduate program.

Experimentation with the core program as a package in summer NDEA institutes produced numerous ideas as to how its articulation might be improved.

Requirements:—The present core program consists of three 4 quarter hour courses: Introduction to Geography, Human Geography, and Physical Geography. A 3 hour climatology course which is offered as part of the General Studies program is a prerequisite for the Physical Geography course, because it introduces students to notions of process which can be built upon effectively.

The Liberal Arts student majoring in geography is required to take 4 hours of Economic Geography, 4 hours of Cartographic Methods, two 2 hour tutorials, two 7 hour systematic or regional advanced sequences, and rounds out the required 45 hours with 4 hours of electives. The Education student majoring in geography is required to take an additional 4 hour course in the Teaching of Geography, and has only 3 hours of electives.

The Liberal Arts student minoring in geography is required to take Economic Geography and Cartographic Methods, with 4 hours of electives. The Education student minoring in geography or majoring in social studies follows the same program, except that he replaces Cartographic Methods with Teaching of Geography.

Individual required courses:—Introduction to Geography, which is a prerequisite to all other courses, has the objective of introducing geographic viewpoint, concepts, and reasoning in research and teaching. It has the additional objective of presenting techniques of map reading, and the use of maps for analysis and description. The course uses the problem-oriented approach, which we consider vital to stimulating student interest and presenting geography as a whole rather than as a set of pieces labelled physical, cultural, and economic geography. Although this approach makes no attempt to present a world survey of substantive material, we believe it permits clear illustration of geographic concepts and thinking, and offers an opportunity to develop familiarity with basic geographic techniques, such as the use of maps. An example of the kind of question asked in this course is, "Why has St. Louis dropped from third largest city in the United States in 1870 to eleventh largest at the present time?" When students suggest answers they are invited to support these answers with appropriate data, which are used in turn to generate additional questions.

The objective of Human Geography is to develop an understanding of the spatial distribution and space relationships of man through the application of the concept of culture. The approach is largely historical in nature, and uses selected case studies to lead students to contemporary problems. A survey of selected world patterns including spread of migration, domestication of plants and animals, and spread of urbanization is used to develop an understanding of the diffusion and assimilation of the ideas, activities, and artifacts of man. Stress is placed upon the evolution of how man has regarded and used his environment. The concept of "culture region" is dealth with at length. Detailed consideration of economic activity is reserved for the subsequent course in Economic Geography.

Physical Geography has the objective of achieving an understanding of environmental processes as they affect place. The course is structured by the systems approach based on energy and moisture exchanges and the use of the water balance model as a tool for inquiry of the environment. Physical Geography builds upon the department's climatology course in the General Studies program, which is a prerequisite. In the climatology course the student is taught concepts of the operating climate with its energy and moisture exchanges, their relation to the hydrologic cycle, the water balance accounting system, their significance for climatic classification and implications of climate as a resource of place. In Physical Geography environment is regarded as a set of systems whose intensities vary with the unique endowent at a given place. These interdependent systems are considered problems of management subject to manipulation in order to achieve economic or social goals. Emphasis is placed upon questions or problems to incite a chain of reasoning and lead students to discover environmental process for themselves.

Economic Geography, which is in the advanced curriculum, can develop deeper penetration in its objective of achieving an understanding of the processes responsible for the spatial distribution of economic activities, and the interaction of those activities. Case studies, rather than a survey of world patterns, are used to investigate the locational attributes of production, exchange, and consumption activities from local to national scales. Stress is placed upon application of the concepts and techniques of location theory and the significance of level of economic development.

The Cartographic Methods course assumes knowledge of topographic map reading skills, uses of maps, and projections from the core courses or programmed learning assignments. The objective of the course is to achieve competence in map construction using assigned problems which require selection from alternative scales, symbolization, and descriptive quantitative techniques. The course utilizes a 20 station laboratory equipped with drafting tables and standard equipment including lettering sets plus specialized equipment such as enlarger/reducers and electric calculators. Each student has his own station and is given access to the laboratory throughout the day and evenings.

The course in Teaching of Geography was introduced after experience with NDEA Summer Institutes indicated that some in-service teachers have major shortcomings, including not knowing what to do except following a textbook, inability to judge textbook quality, and lack of time to prepare course materials from scratch. The objective of the course is to develop competence in the presentation of contemporary materials and ideas, and to create an understanding of how to keep in touch with new developments in geography. When students are developing teaching units appropriate to the level at which they plan to teach, an effort is made to assign topics which can be handled easily in any school system by using local data, yet those which still achieve conceptual goals.

Each major student in geography is required to enroll in two 2 hour Tutorials under two different staff members during his senior year. The tutorial provides an opportunity for assessing the capabilities of individual students in small group discussion, and for exposing them to the profession of geography. Each student is required to prepare written and oral presentations for criticism by his peers and the faculty member. The tutorial system ensures that every undergraduate major becomes known personally to at least two members of the permanent staff.

Additional courses:—The advanced systematic and regional geography courses have broad titles within which course content can be as flexible as the instructor and students desire. For example, formerly separate courses in agricultural, manufacturing, urban, and transportation geography have been replaced by a single two quarter sequence in Advanced Economic Geography; one instructor in the new sequence might devote it entirely to agriculture, whereas another would focus solely on location theory. The first quarter of each sequence is a 4 hour general survey, which is followed by a 3 hour penetration in depth dealing with rather more specialized problems.

Advanced sequences are offered in physical geography, cultural geography, economic geography, geographic techniques, the regional geography of Africa, the regional geography of Latin America, and regional planning. The other advanced course offerings are 4 hour courses in the Geographic Basis of Resource Management, Regional Problems in Resource Management, and Urban Planning, plus Readings and Honors courses with variable credits.

Concentrations:—Concentration within the major is limited by the tight time framework of the junior-senior year, and by the selective course offerings of the department, which make no pretense of covering all possible regional and systematic specializations. The emphasis of the department is upon study of the processes and principles of systematic geography, with the premise that a person well trained in systematic geography can work effectively in any region, given familiarity with substantive knowledge of the region. The regional concentrations of the department, therefore, are restricted to Latin America and Africa, which are supported by strong interdisciplinary programs within the university.

Within the major the 14 hours of advanced sequences, plus electives, reading courses, independent study, and perhaps an honors thesis, can be used to build a concentration. Although some students may earn up to 20 hours in a concentration area within the department, for the majority the concentration consists of no more than 12 to 15 hours. The more common concentrations are urban and regional planning, climatology, water resources, resource management, domestication of plants and animals, and historical geography. Students are urged to select courses in other departments which are cognate to their concentration areas within geography.

Faculty involvement:—As a matter of departmental policy, each faculty member is involved in the undergraduate major program, even though the general studies and graduate programs place heavy faculty teaching demands upon the department. The reasons for this involvement include: (1) a strong belief that undergraduates deserve the opportunity of being taught and stimulated by senior as well as junior faculty: (2) a feeling that the undergraduate major program can best be articulated with the general studies and graduate programs if faculty members participate in each program; (3) alternation of teaching duties in each required course among a team of two or three faculty members gives desired flexibility while ensuring that the objectives of these courses are met; and (4) an unwillingness to delegate full teaching responsibility for any course to a teaching assistant.

The teaching load is restricted to six to eight contact hours, or two courses, per quarter to permit time for faculty contact with individual students. Class enrollment is normally restricted to a maximum of 35 students. In the general studies social science course, where enrollment exceeds 1,000 students per quarter, a single faculty member prepares a set of live and taped television lectures. He is assisted by teaching assistants responsible for discussion sections of 30 students.

The program is modified by staff decision based on recommendations from two major sources, the Undergraduate Program Committee and the staff teams responsible for teaching required courses. The Undergraduate Program Committee, composed of four staff members including the undergraduate advisor, is responsible for liaison with other campus units, such as the College of Education, which are served by or related to the geography program, and for an annual program review to make appropriate recommendations for staff discussion and action.

Suggestions for change are also made by the teaching teams responsible for each of the three core courses, economic geography, and cartography. These teams of two or three staff members alternate the teaching of these courses, work together to establish syllabi, ensure that course objectives are met, and minimize overlap between courses. These teaching teams are expected to generate improvement and change recommendations which can be presented at faculty meetings for discussion and decision by the entire faculty.

## The Undergraduate Major as an Institution

Recruiting:—The basic problem in recruiting bright students is an information gap, or lack of awareness on their part, of what contemporary geography is, and of the vocational opportunities available to geographers. The department uses several devices to establish contact with potential majors and thus to close the information gap. Approximately 5,000 students are enrolled in the six General Studies Program courses which the department offers each year. Each of the graduate teaching assistants in these courses is familiarized with the undergraduate program, and is urged to inform and encourage promising students in their laboratory or discussion sections. Enthusiastic teaching assistants can be excellent recruiters.

At the end of each General Studies course the professor sends every "A" student a letter of congratulations which explains that geography is interested in top calibre students, and says that they are welcome to come in and discuss the geography major program or any aspect of their program. These letters have paid off handsomely, not only in the recruitment of majors, but in rapport with students and parents, who are impressed that a faculty member has shown such interest.

When a promising student has shown some interest in geography, he is employed, when opportunity permits, as a student worker in the department, to assist a staff member in his research or course preparation. This stimulates the student's interest and awareness of opportunities.

When he declares himself a major, the student is given a complimentary copy of Geography as a Professional Field (U. S. Department of Health, Education, and Welfare, 1966), which informs him of opportunities in the field, and may also be circulated among his friends. The major student himself, if he is enthusiastic about his program and about geography, is one of the most effective recruiters; a good program is its own best advertisement.

Advising:—Advising is concentrated in the hands of a single individual, the full time Administrative Aide to the Chairman, who is responsible for advising all geography majors in the College of Liberal Arts, and is also a key member of the departmental Undergraduate Program Committee. Centralization of advising provides better communication with students regarding course offerings and program requirements, and is an easy means of following student academic progress. It also facilitates keeping tab on the

location of students so that they can be contacted on short notice when placement opportunities arise, or when visiting lecturers suddenly appear.

A continuing problem of advising is maintaining good liaison with other academic units, such as the College of Education, which sometimes inappropriately advise their students majoring in geography. Furthermore, advisors outside the department often are unaware of employment opportunities, other than teaching, which are available to geography majors. An attempt is being made to keep these advisors better informed by giving them, each term, a brochure describing our program requirements and offerings. Each of them has also been given a copy of Geography as a Professional Field to acquaint them with opportunities for employment of geography majors.

Informing undergraduate majors of appropriate employment opportunities in January of their senior year has proven to be an important facet of advising. This is a good time to put students in touch with employers, or in the case of students warranting consideration for graduate study, for submission of applications. Students with high grade averages and interest are encouraged to apply to three or four graduate schools where they can best develop their desired specilizations.

Contacts:–The problem of maintaining informal contact between staff and students continues throughout the program. Many undergraduates, who are free and forthcoming with their own ideas and questions in tutorial sessions, tend to be shy and retiring in the mixed company of faculty members and graduate students, whether in discussion following talks by visiting lecturers, or at social events such as departmental picnics. An attempt has been made to alleviate this situation by converting a basement storage area into a departmental coffee lounge. Students and faculty members are encouraged to stop in for coffee at 10 a.m., but the greatest value of the lounge may be the provision of a place for a faculty member to bring a student to carry on an informal discussion after class.

An attempt to establish an undergraduate geography club last year was unsuccessful, in large measure because there were already so many departmental guest lectures and seminars that there was neither time nor need for a club with a regular program. A considerable undergraduate fellowship has already been created by the fact that all majors take the same core courses, and they become especially well acquainted in the cartography laboratory and tutorials.

Undergraduate field trips independent of courses, which can be effective in developing staff/student contact, have been held infrequently and with mixed success. Consideration is presently being given to a program of three trips a year, one a reconnaissance and two focused on problems. Such a program should foster informal contact and stimulate interest, and if it is successful, it could be an asset in recruiting majors.

## Results of the Program

It is much more difficult to assess the vocational objectives of geography majors than might be anticipated, for perhaps as many as 50 percent do not know which vocation they wish to pursue even as late as their senior year. One may assume that geography majors taking a degree in the College of Education, as well as those earning a degree in the College of Liberal Arts and Sciences who are taking a teaching certificate as a minor, will become elementary or secondary school teachers. These two groups together constitute about half of the geography majors, leaving the other

half, all of whom are in the College of Liberal Arts, who have not declared themselves for a teaching vocation.

A few of these students have clear motivation toward specific vocations, such as cartographer, intelligence analyst for the government, or planner, but the majority simply do not know what vocation they wish to pursue. This raises the question of why they became geography majors. It appears that some have been attracted by a facet of the field in which they have done well or from which they receive personal satisfaction, such as the cartography student who is gifted with his hands. Others, who are attracted by the personality of a particular staff member, have only a vague notion of what they might do with their training in geography.

Explicit efforts are made to inform all geography majors of vocational opportunities, so that their lack of decision is not a result of a lack of knowledge of these opportunities. During the senior year in the tutorial sessions, an attempt is made to develop a better understanding of the profession, and again opportunities in geography are dealt with. At the time of advising during the senior year students are invited to take advantage of the assistance which the department can offer in procuring a position.

It is difficult to keep track of alumni, and attempts to do so have not proven particularly successful. The vast majority of recent graduates whose present employment is known have gone on to graduate school, or have entered teaching. Many of the graduate students will also become teachers, so teaching is even more important than is directly indicated. Of greater importance, however, is the fact that so little is known about the vocational placement of former major students. The present employment of half is unknown, and another ten percent are in military service, probably in a non-vocational situation, which leaves only two-fifths whose present activities are known.

The next issue of the departmental newsletter, instead of being merely a source of largely social information, will be used in an attempt to obtain a better idea of the results of our program. An effort will be made to increase contact with alumni of the department, and to secure information on types of employment, salaries, and opinions as to the value of the undergraduate program as a preparation for various vocations.

## Whither the Department?

Looking to the years ahead, it is anticipated that the structure of the undergraduate program will remain essentially the same, with the core curriculum serving both as a terminal preparation and as a platform upon which the major is built. This expectation is based on continued growth in the demand for geography teachers and a growing clientele of College of Education minors and majors. At the same time, the backgrounds of the students coming to the core curriculum will be increasingly heterogeneous as junior college systems begin to supply more and more advanced level students and as Southern Illinois University assumes its role in the State of Illinois Master Plan as an upper level institution focusing on advanced undergraduate and graduate level programs. With changes in mind, it is useful to identify some of the questions facing the department.

Foremost is the question: What will be the quality and the kind of geography preparation given by the junior colleges? The answer will indicate the appropriateness of requiring the core curriculum for transfer students from junior colleges. If the core is not appropriate but advanced courses are, should opportunities for greater specialization be established?

If junior college preparation in geography is not adequate, what can be done to upgrade the quality of teaching in the junior colleges? Thus far a very limited experience suggests that the quality of junior college geography training is weak and poses a serious problem.

A second concern is the future role of regional studies programs in such areas as Africa, Latin America, and Asia, which are expanding into the freshman and sophomore levels of the university's General Studies Program in an attempt to provide students with a strong background and interest in a subarea of one of the world's major regions. Growth of these programs would demand more regional course offerings by the department, and possibly instructional assignments with students working overseas. How should courses offered for regional specialists, who might not even be geography majors, be related to the core curriculum of the department?

Teaching technology is exploding with innovations, and the implications of these innovations for the major program must be explored. Television can enable a single staff member to teach large numbers of students while standardizing presentation, but how effective is televised instruction? The opportunities presented by the computer, apart from grading, are particularly intriguing, but must be developed effectively. The computer can store large data banks from which students can call and display information relevant to a problem, thereby decreasing busy work transforming data into maps and increasing time for reasoning and discussion. Computer assisted instruction can free lecturers to focus more attention on arguments and issues, but the preparation of good programs is expensive and time-consuming.

Apart from innovations in teaching technology, there is the very dynamic nature of geography itself. To help keep apace, the National Defense Education Act has supported summer institutes for retraining teachers, and a few universities have alumni days to bring graduates back for refresher seminars. Perhaps it is time to consider offering graduates of the first core program an opportunity for updating their competence with such a seminar; discussion is currently under way with the university's Alumni Office to determine how and when one might be offered most successfully.

The obligation of the department to the undergraduate major program requires continual attention to the changes and opportunities ahead. This obligation must be met, despite increasing competition from graduate and research programs, or the department will have forfeited its right to complain about deficiencies in the undergraduate training of new graduate students and the quality of instruction at "other" institutions.

B.A. degrees with Honors in geography are awarded to students who maintain a B average or better and who undertake an honors program that includes intensive advising and participation in two undergraduate honors seminars. Summa, magna, and cum laude degrees are awarded. The seminars are on the research fields of faculty and provide an opportunity for majors to work closely with professors.

Since numerous courses are offered at different levels of study, the programs of poor, average, and good students can be worked out to suit the capabilities and interests of individuals. There is no one mould producing a standardized product.

Academically the department offers strong programs in a number of subfields within the regional, topical, and technical rubrics. These can be identified by surveying the course titles. If there is any general cast to the department, any stamp or mark, it is one that combines the theoretical-cartographic-statistical, cultural-historical, and methodological approaches. There is a strong emphasis on "how to do it" and "why this way?" about the work of the department.

Faculty involvement:—All faculty members participate in the undergraduate major program. The normal teaching load consists of seven 3 quarter hour courses per year. These would probably include one large introductory lecture course, one upper division service course, three advanced lecture courses primarily for majors and graduate students, and one or two seminars (one of which might be for undergraduates).

The introductory physical geography course is taught on closed circuit television and has no limitations on total enrollment, while the introductory human geography course is taught in two large lecture groups with limits of 500 and 250 students; each of these courses is broken down into discussion sections of no more than 25 students, which for the most part are taught by graduate teaching assistants. The general upper limits on enrollment in the Fall of 1967 were 150 in upper division regional service courses, 100 in upper division topical service courses, 60 in advanced lecture courses, and 25 in technique and field courses. The actual enrollment normally runs about sixty percent of these maxima.

At Minnesota we believe that proper adjustments and innovations require an alert faculty as well as a system of continuous review with simple machinery for making changes. We believe that permanent chairmanship is an obselete institution, for we feel that no single individual, with the very best of intentions, can continue to initiate all the necessary changes in curriculum and organization. Our experience indicates that a relatively short chairmanship of 3 to 5 years is best.

The mechanism for continuous review is relatively simple. We have felt that solutions to problems of obsolescence and innovation are important enough for us to spend at least one hour a week on them. This weekly dialog is perhaps our best departmental tradition, and is our main instrument for decision.

## The Undergraduate Major as an Institution

Recruiting:—A good undergraduate major program is its own best salesman. At Minnesota virtually no freshmen arrive on campus expecting to take a geography major, although many come primed for physics, history, chemistry, and languages. About one-half are unsure of their prospective major. Of the others a substantial number alter their intentions at a later date. As far as geography is concerned the only way of assembling a substantial body of undergraduate majors is to expose freshmen and

sophomores in large numbers to good introductory courses. Enrollments in the three introductory courses stand at about 4000 a year (including summer session) and are still rising slowly while entering freshmen classes are declining slightly. This confrontation with geography creates a broad reservoir of student acquaintance with the field from which elections of the geography major are made.

Any department would like its majors to be better than average students. At Minnesota an effort is made to attract students who have high level performance (as an A and B) in two introductory courses by sending them personal invitations to participate in undergraduate seminars. This procedure has had about a fifty per cent success ratio.

We have not investigated the precise role of the student grapevine in the selection of geography as the major. No doubt it is considerable. It seems that the department has a good academic reputation with students, a reputation somewhat better than the average department in CLA. Nevertheless, whatever results the grapevine has in terms of selection of the geography major, though it may encourage men to be majors, it does not encourage women.

Advising:—Honors students get intensive advising. For the average major the usual procedure, after he has been assigned an adviser, is the drawing up of a partial program in the upper division. This is then adjusted and amended as the student progresses through his junior and senior years.

In the lower division only honors students are assigned faculty advisers, the remainder receiving counsel from a corps of student personnel working within the Office of the Dean.

## Results of the Program

The vocational objectives of most majors crystallize in the junior and senior years. Virtually all students who qualify for graduate work in geography go on to graduate school, either at Minnesota or elsewhere. At the B.A. stage many already have vocations in mind which may be college teaching and research, city and regional planning, or environmental research. Those who finish formal study with the B.A. have rather wider vocations. Some students take geography as a broad generalizing subject which provides a suitable background for a variety of jobs. Others move directly into government service ("intelligence" in its broadest sense), cartography, city and regional planning, market analysis, etc.

## Whither the Department?

As with the rest of this report, the critical issues outlined here are based on the writer's own experience. They are not a departmental consensus. Their order is random.

For some years it has been difficult to organize field courses in a satisfactory manner. There was little administrative support for them, and faculty members who undertook them did so at their own risk and often out of their own pocket. There is now administrative recognition of their significance, and modest yet adequate financial support is now available. This has stimulated both faculty and student interest.

The massive expansion in student enrollments in upper division courses has meant some restructuring of the curriculum to retain the relatively small classes for advanced courses that have proved so useful in the past. This restructuring, of which the main element is the creation

of a battery of survey courses with both regional and topical heading, is far from complete and cannot be complete until new faculty appointments are made.

Enrollment increases in upper division courses continue. Between 1962/3 and 1966/7 student enrollments in these rose from 1,080 to 1,900. In 1967/8 we expect about 2,400. Although we hope to maintain the advanced nature of most of these courses, the new survey courses will have heavy enrollments necessitating the use of graduate assistants. We have not yet decided on the method by which such assistance can be made meaningful to the graduate assistant's own program of study.

The system of advising in upper division needs revision, probably at both departmental and college levels. While the faculty is committed to a broad view of the field we have not yet found a solution to the large amount of advising time a program of electives takes.

There is a lack of cohesion among the undergraduate majors. They have many contacts with faculty and graduate students but not many amongst themselves. This is partly a function of numbers. Attempts at remedying this situation are underway at the present time, largely instigated by graduate students.

It is difficult, given existing college and departmental procedures, to summarize in tabular form information about past and present geography majors. While the actual usefulness of such information is sometimes rather elusive it is basic data of a kind that can sometimes create its own value.

# APPENDIX

## UNDERGRADUATE MAJOR PROGRAMS IN AMERICAN GEOGRAPHY

During the winter of 1966-67 the Panel on Program Inventory and Development of the Commission on College Geography circulated a questionnaire concerning undergraduate major programs to the chairmen of a stratified sample of geography departments in the United States. The departments were stratified in terms of the degrees granted between 1960 and 1965, and a sample of 45 departments was drawn as follows: 10 which granted the doctorate; 10 in which the master's degree was terminal; 10 which granted more than 60 baccalaureate degrees; 10 which granted 40 to 60 baccalaureate degrees; and 5 which granted less than 40 baccalaureate degrees. Responses were received from 40 departments, which granted 2,729 (45.6%) of the 5,983 baccalaureate degrees awarded in geography in the United States between 1960 and 1965.

Some colleges and universities are on the quarter system, whereas others are on semester or trimester systems. For convenience, all programs were standardized into quarter hour equivalents on a 1/1.5 basis; one semester hour equals one and a half quarter hours. All credit hour data in this report are in quarter credit hours, but they can easily be converted to semester credit hour equivalents by applying the one and a half to one ratio.

In the 40 responding departments the mean undergraduate major program in geography requires 48.3 quarter hours of course credits, roughly the equivalent of a full academic year's work, or one-quarter of a normal four year program as an undergraduate. The minimal number of quarter credit hours required for a major in geography ranges from 36 to 60.

The requirements within the department for a degree in geography can be divided into three categories: (a) core courses which are required of all undergraduate majors; (b) specialty group areas from which students must select a specified number of courses or credit hours, but within which they are free to choose; and (c) free elective hours or courses. The number of hours in the core program, which is required of all undergraduate majors, ranges from 9 to 48, with a mean of 28.9. The number of hours required in specialty group areas ranges from none to 30, with a mean of 8.0. The mean number of free elective hours is 11.4, with a range from zero to 27.

To summarize, the normal – if there is such a thing – undergraduate major student in geography takes 28.9 hours of required courses, selects 8.0 hours of course work from specified concentration areas, and is free to take any additional 11.4 hours in the department to satisfy the minimal degree requirements of 48.3 quarter hours.

These norms can be misleading, however, because at least three different doctrines appear to underlie the structuring of undergraduate major programs in geography. The "core" doctrine requires all major students to take the identical core of required courses. The "elective" doctrine permits students, with the consent of an advisor, to use almost any course

offered by the department in satisfying the credit hour requirements for a major. The "optional" doctrine divides course offerings into broad specialty group areas, and requires the student to take a certain number of courses or credit hours within each, but gives him considerable leeway (again, subject to the approval of an advisor) in deciding which courses he will elect within each specialty group area.

These doctrines are not related to the size of the department, nor to the highest degree which it grants. One leading doctoral department, for example, has the most restrictive undergraduate program in the nation, whereas two others have the most permissive. The initial stratification of departments by size and highest degree granted was abandoned, therefore, because it has such a tenuous relatipnship to undergraduate major programs.

Further tabulations are based on a re-classification of departments into four groups: Group C consists of the 9 "core" departments, in which at least three-quarters of the undergraduate major program is identical for all students; Group O consists of the 8 "optional" departments, in which undergraduate majors select at least 40 percent of their required credits from specialty group areas; Group E consists of the 10 "elective" departments, in which undergraduates may select any course offered in the department to satisfy 40 percent or more of the requirements for a major; and Group X consists of the 13 departments which do not fall into any of these pigeonholes. The differing nature of requirement structures in these different categories of departments is illustrated in Table I.

TABLE I

Average Number of Quarter Hours
Required in Specified Categories,
By Type of Department

| Type of Department | Required of all majors | Optional within specialties | Elective | Total required hours |
|---|---|---|---|---|
| Group C | 36.2 | 6.6 | 2.3 | 45.1 |
| Group O | 18.4 | 21.2 | 7.5 | 47.1 |
| Group E | 27.3 | 1.4 | 21.0 | 49.7 |
| Group X | 31.6 | 5.8 | 12.8 | 50.2 |
| All departments | 28.9 | 8.0 | 11.4 | 48.3 |

The complete list of courses required for a degree in geography in all 40 responding departments falls rather easily into the five major categories of physical geography, cultural/human geography, regional geography, geographic techniques, and others (Table II). The list is a bit shorter than might have been expected, for it contains a total of only 27 courses, and two of these are required by only a single department. By far the most common requirement is an introductory course in physical geography. This is followed at some distance by cartography and introductory economic geography. An introductory course in cultural/human geography and "any regional course" are the only others required by as many as half of the responding departments.

# UNDERGRADUATE GEOGRAPHY AT THE UNIVERSITY OF MINNESOTA: A LARGE UNIVERSITY WITH AN ALL-DEGREE PROGRAM

**John W. Webb, Chairman**

## The Institutional Setting

Even by the size standards of state universities, the University of Minnesota is a large institution with an enormously wide range of academic activities. Most departments and colleges are sizeable operations, engaging in a broad range of teaching, research, and service functions. Undergraduate education is a highly significant element in departmental affairs. In such a large institution it is hardly surprising that a department which receives reasonable administrative support, and which pursues its activities along a broad front, will mount an operation of considerable size.

The Department of Geography at the University of Minnesota was founded in 1925, although courses in geography had been given earlier. During and after the second world war there was a complete turnover of faculty, and a shift away from a narrow research orientation toward a more comprehensive intellectual effort in geography. In the University as a whole, and in the department, the interrelationships between the various components of departmental programs – faculty, graduate, undergraduate; teaching, research, service – are quite strong.

A key feature of the department is the purposeful integration of research, teaching, and learning by faculty, graduate students, and undergraduate students. All faculty act as undergraduate advisers, all give undergraduate courses, all participate in decisions concerning undergraduate education in geography. Introductory courses, one of the few means by which geography majors come to know their chosen field, are given by a large proportion of the faculty in any one year. Graduate-undergraduate interaction is heavy in the three introductory courses (Physical, Human, Economic) where teaching assistants meet sections of about twenty-five students twice a week. Contacts between geography majors and graduate students are particularly strong in cartography, statistical, computer and field courses. The department thus operates at many levels and in varied capacities, with each level and each capacity enmeshed in a network of mutual support.

The history of the growth of the department does not concern us here, but a single point from that experience of growth is relevant. Even with the best of good will on the part of the department, the college, and the university, a strong undergraduate major and program cannot be built in a year or two. Assembling a quality faculty, building the geography collections in the library system, finding satisfactory physical quarters, pursuing that elusive necessity, esprit, these and other essentials take time. If there is any recipe for the creation of a strong undergraduate structure, its precise ingredients are unknown. Certainly it cannot be delegated to new assistant professors; it must be the core interest of a majority of the faculty, and it must be integrated with the graduate and research programs. But this is not all. Perhaps much effort with results brings more support, which generates more effort and success which brings more support, which generates more. . . .

Geography is a department of the College of Liberal Arts (CLA), the largest of the many colleges and schools comprising the university. The department faculty are also members of the faculty of the Graduate School.

As CLA faculty the staff are concerned both with the aims of liberal education and with professional preparation. The general education of citizens depends upon the replenishment of the ranks of those engaged in extending the bounds of geographical knowledge. Similarly there will be no new generations of geographers unless the word is preached to the multitudes and conversions are made. Obviously there are bound to be conflicts between these two in the allocation of human and material resources, but equally obviously they must exist side by side if the intellectual enterprise that is geography is to maintain and increase its importance.

Distributive requirements:—The candidate for the degree of Bachelor of Arts must accumulate 180 quarter credits, of which at least 84 must be acquired in the Lower Division. The great bulk of the remainder are taken in the Upper Division. An average of C or better must be maintained in all work, in the major, and in the Upper Division. One fourth of all credits (but none in the freshman year) may be taken on a "pass - no credit" basis. An "English Proficiency Test" must be passed in the Upper Division.

All BA degree candidates must pass Freshman English or its equivalent; complete the sixth quarter of a foreign language or pass a validation examination at that level; offer nine credits in six of the following areas, including work in at least one area from each of groups A, B, and D, and in two areas from group C.

Group A: Communication, Language, Symbolic Systems; Area 1, linguistics, rhetoric, logic, philosophic analysis; Area 2, mathematics, statistics.

Group B: Physical and Biological Sciences; Area 1; physical universe (with lab); Area 2, biological universe (with lab).

Group C: Man and Society; Area 1, analysis of human behavior; Area 2, analysis of social, economic, and political institutions; Area 3, development of civilization: historical and philosophical studies.

Group D: Artistic Expression; Area 1, literature; Area 2, the arts.

At the present time all geography courses that can be used for these distribution requirements are located in [illegible] C, Area 2. Technique courses, such as cartography, and advan[illegible]gional and topical courses cannot be used to satisfy these requiremen[illegible]ost students use the introductory courses.

These distribution requirements are of very recent origin. It is highly likely that there will be early modifications of the general scheme and of the position of certain geography courses within the scheme.

Facilities:—In the Fall of 1967 the department had about 150 undergraduate majors, 83 graduate students in residence, 29 teaching assistants, and 15 fulltime faculty members. Its facilities and equipment are adequate. Most of the staff are housed in the Social Sciences Building on the university's new West Bank campus, which includes office towers, classroom buildings, and the new library. The Map Library, with the collection of geography periodicals and serials, is located adjacent to the department. Cartographic classrooms and laboratories, and general purpose rooms of various types are in an adjacent building with immediate access via a covered walkway. Funds are available for purchasing teaching materials of all kinds.

## The Major Program

The university world, although it pays lip service and occasional homage to stability, changes continuously. Nothing could be further from the

truth than the notion that there is some kind of ideal steady state in the affairs of a department which will provide the conditions for developing a strong major. Constant development and adaptation must be the watchword of any department that hopes to continue its operations into the future. Atrophy and decline will set in unless organization and curriculum are matched to changes in its parent and other higher educational institutions and in the national and international discipline. Thus this report describes a departmental montage that contains some elements that are outmoded and will disappear in the not so distant future, others that are tried and still true solutions to problems they have solved for some time, and still others that are experiments to solve problems that have appeared only recently. As it is with the discipline, so it is with the curriculum. Just as we should not use the geography of 1937 or 1947 in our 1967 classrooms, we also should not use curriculum and administrative structures two decades old. Complete rejection of the past, however, would be worse than no acceptance of the new. What is valid from the past must be integrated with the present, and these must be concerted with the experimental future.

It is sometimes argued that strong programs are based on the charismatic qualities of individual instructors who dedicate a substantial portion of their professional careers to undergraduate students and to the undergraduate courses they give. At its extreme this theory would say that the qualities of any curriculum derive exclusively from the individual characteristics of the professors. If this were so there would be no possibility of learning from other departments and other programs and all that could be done would be to try and steal as many proved good faculty as possible. A better approach would be to note that a strong program can hardly be expected to develop if the undergraduate major is treated as a side issue and if the undergraduate courses are not integrated into the research and graduate sides of the department. With a relatively low teaching load any faculty worth its salt should be able to generate the necessary enthusiasm. Enthusiasm presumably cannot develop in a situation where instructors do not have freedom to change the design of their courses, select books, make assignments, and generally initiate changes.

Our experience shows that it is best to seek new faculty for their quality rather than for their teaching specialties. The Minnesota faculty create the course structure out of their interests and their feelings of responsibility toward the department. The annual list of courses offered would never duplicate an ideal list drawn up by a committee of experts. It is ideal, however, given the individuals who comprise the faculty, and given that faculty and student enthusiasm are higher under this system than any other.

Requirements:—The student majoring in geography at Minnesota is not required to take any specific course, because the major program is multi-track in structure, with many options and alternatives. The student, with his adviser's approval, normally selects a combination of courses that gives him a broad geographic background and at the same time provides him with an insight into the research problems and findings of one or two particular subfields of geography.

The prerequisite to the major program is completion of any two of three 5 credit introductory courses in physical geography, human geography, and economic geography. To receive an A.B. in geography a student must complete 30 quarter hours of upper division courses in geography including one 3 credit field course, two 3 credit technique courses, two 3 credit regional courses, two 3 credit topical courses, and one 3 credit course in geographic thought.

Individual courses:—Each of the 5 credit introductory courses has three lectures and two discussion section meetings per week. The physical geography course covers heat and water balance; vegetation, soils, and landforms; model areas; transitions; and the physical environment as a system. The human geography course deals with the culture concept; environmental perception; cultural regions; principal ways of life; and population geography. The topics covered in the economic geography course are systems of resource exploitation; fabrication and circulation of goods and services; and industrialization and location principles. Within these broad topical frameworks the content and organization of each introductory course vary with the instructor.

Field courses are offered in the historical geography of North America, American cities, economic localization, urban geography, air photo interpretation, landform geography, and climatology. Each field course has as a prerequisite an advanced lecture course on the subject. In each case the field experience involves problem definition and the development of field techniques suitable for its solution. Since enrollments are relatively low, most field courses are in a sense tutorials. Students usually take a field course in their senior year. We believe that many students feel these are the most rewarding experiences of their university careers.

Technique courses are offered in introductory cartography, statistical cartography, advanced cartography, air photo interpretation, quantitative methods in geography, quantitative research design, area analysis and sampling, and source materials for geographic research. Although some students fulfill this requirement by taking two beginning courses (for example, introduction to cartography and quantitative methods) most take a sequence of two or three courses. Each course includes a "set piece" in which techniques learned are put to specific use.

Introductory regional courses are offered on the geography of Africa, Europe, Latin America, the Soviet Union, Minnesota, North America, and the Tropics. On a more advanced level, with smaller enrollments, courses are offered on the regional geography of Western Europe, East Central Europe, Norden, the U.S.S.R., Mediterranean, Middle East, Sub-Saharan Africa, South Asia, Southeast Asia, East Asia, Australia-New Zealand-Oceania, Historical Geography of North America, Western United States, Eastern United States, Canada and Alaska, Middle America, and South America.

Topical courses include maps and map interpretation, landform geography, geomorphometry, climatology, advanced climatology, dynamic and synoptic climatology, North American resource management, rural geography, geography of outdoor recreation, geography of industrialization, geography of economic localization, urban geography, two courses in the location and geographic design of American cities, and political geography. Major students sometimes satisfy this requirement by taking two or three survey courses, but most complete a sequence of courses in a subfield such as urban geography or climatology.

Courses on geographic thought include a course on the development of geographic thought, a course on geography in the Age of Discovery, and a proseminar in the development of geographic thought. This requirement is usually completed in the senior year.

Additional courses:—Other courses available for inclusion in major programs include "Directed Readings," a course of tutorial type for students who have specific fields they wish to investigate. Special courses given by visiting professors are also available in most terms.

TABLE II

Number of Departments Requiring Specified Courses,
By Type of Department

| Course | Type of Department | | | | |
|---|---|---|---|---|---|
| | Group C | Group O | Group E | Group X | Total |
| Total number of departments | 9 | 8 | 10 | 13 | 40 |
| Physical Geography | | | | | |
| Introductory course | 9 | 8 | 7 | 13 | 37 |
| Climatology/meteorology | 1 | 2 | 4 | 8 | 15 |
| Geomorphology/landforms | 0 | 2 | 2 | 5 | 9 |
| Any advanced course | 1 | 1 | 1 | 1 | 4 |
| Cultural/Human Geography | | | | | |
| Introductory cultural/human | 6 | 6 | 4 | 5 | 21 |
| Introductory economic | 7 | 2 | 8 | 10 | 27 |
| Political | 3 | 0 | 1 | 3 | 7 |
| Urban | 2 | 0 | 1 | 1 | 4 |
| Advanced cultural | 1 | 0 | 2 | 0 | 3 |
| Advanced economic | 1 | 0 | 1 | 0 | 2 |
| Any advanced course | 1 | 3 | 1 | 1 | 6 |
| Any Systematic Course | 1 | 5 | 0 | 1 | 7 |
| Regional Geography | | | | | |
| World regional | 3 | 1 | 3 | 5 | 12 |
| Anglo-America | 3 | 1 | 4 | 6 | 14 |
| Any regional course | 8 | 7 | 1 | 4 | 20 |
| Techniques | | | | | |
| Map reading | 2 | 1 | 4 | 3 | 10 |
| Cartography | 7 | 3 | 8 | 10 | 28 |
| Air photo interpretation | 1 | 0 | 0 | 1 | 2 |
| Field methods | 3 | 3 | 3 | 7 | 16 |
| Quantitative techniques | 3 | 0 | 1 | 1 | 5 |
| Methods | 1 | 0 | 0 | 2 | 3 |
| Any techniques course | 0 | 1 | 0 | 0 | 1 |
| Other | | | | | |
| Introduction to geography | 0 | 2 | 3 | 0 | 5 |
| Senior seminar/colloquium | 4 | 3 | 2 | 4 | 13 |
| History and philosophy | 3 | 0 | 1 | 2 | 6 |
| Tutorial | 0 | 0 | 0 | 1 | 1 |
| Independent study/thesis | 0 | 0 | 0 | 3 | 3 |
| Electives | 3 | 7 | 10 | 12 | 32 |

The number of credit hours required in various areas is remarkably uniform, whether by subject or by type of department (Table III). Most requirements are satisfied by courses of 3 quarter hours, 4.5 quarter hours (3 semester hours), or 5 quarter hours. The principal exceptions are in the optional areas, where a student is required to select any two or three courses in a given area.

Examination of the data in these two tables indicates that there may actually be such a thing as a "consensus major program" in geography (Table IV). Although no department fits the pattern exactly, most departments require courses in such areas as introductory physical geography, regional geography, cartography or map reading, and the like. The consensus major program was created by combining the number of departments which require certain courses (Table II) with the average number of hours required in these courses (Table III). This is not presented as an ideal or model program, but rather as an indication of what was probably being done in the spring of 1967 by many, if not most, geography departments in the United States. Perhaps one of the most persuasive reasons for presenting this consensus major program in geography is the very fact that it exists at all; its existence came as a surprise to the members of the Panel, who had not expected to discover such a high degree of uniformity when they circulated their questionnaire.

Although this consensus major program indicates that geography departments in the United States have much more of a common denominator in their programs than many geographers had believed, let it be said at once that this program is also a gross oversimplification of a quite complex situation. For example, many geography departments have a multiple track system of optional degree programs, both within the department and in conjunction with other departments. These optional programs range all the way from simple concentrations within the department to double majors. The principal concentration areas within departments are physical geography, cultural geography, economic geography, cartography, and urban/regional analysis or planning. Each of these concentration areas will have its own special curriculum within the department, and recommended or required courses in other departments. The most ambitious track system has no less than seven concentration areas within the geography department. The principal interdepartmental programs are tied in with elementary education, secondary education, business administration, the earth sciences, and the social studies.

All departments recognize the importance of course work in cognate departments, and all colleges and universities have distributive requirements which force all undergraduate students to sample, in some measure, the range of intellectual fare available to them in the institution. Only nine of the forty responding geography departments require their undergraduate major students to take specific courses outside the department as a qualification for the baccalaureate degree, and five of these nine are in the Group C category of departments which are quite specific in their internal requirements. Six of the nine require 4.5 to 18 quarter hours of mathematics/statistics, with a mean of 9 quarter hours. Three require six quarter hours of physical geology, and two of these three require an additional six quarter hours of historical geology. One requires 9 quarter hours of meteorology and climatology, and one requires 7.5 quarter hours of economics and 4.5 quarter hours of history. The overwhelming fact, however, is the general reluctance of geography departments to require their students to take any specific courses outside the department, other than those which are required by the regulations of the institution.

TABLE III

Average Number of Hours Required in Specified Courses,
By Type of Department

| Course | Type of Department | | | | |
|---|---|---|---|---|---|
| | Group C | Group O | Group E | Group X | All Departments |
| **Physical Geography** | | | | | |
| Introductory course | 10.0 | 5.5 | 5.9 | 6.7 | 6.8 |
| Climatology/meteorology | 4.0 | 5.5 | 4.6 | 4.1 | 4.4 |
| Geomorphology/landforms | - - | 5.5 | 4.5 | 4.5 | 4.7 |
| Any advanced course | 4.5 | 8.0 | 4.5 | 6.0 | 5.8 |
| **Cultural/Human Geography** | | | | | |
| Introductory cultural/human | 5.3 | 4.5 | 5.4 | 5.0 | 5.0 |
| Introductory economic | 4.8 | 7.0 | 4.9 | 4.7 | 4.9 |
| Political | 4.0 | - | 5.0 | 4.5 | 4.4 |
| Urban | 3.8 | - | 5.0 | 5.0 | 4.4 |
| Advanced cultural | 3.0 | - | 4.5 | - | 4.0 |
| Advanced economic | 3.0 | - | 5.0 | - | 4.0 |
| Any advanced course | 4.5 | 8.7 | 4.5 | 6.0 | 6.8 |
| **Any Systematic Course** | 4.5 | 11.4 | - | 9.0 | 7.2 |
| **Regional Geography** | | | | | |
| World regional | 4.7 | 3.0 | 6.0 | 5.5 | 5.1 |
| Anglo-America | 4.5 | 5.0 | 4.0 | 5.0 | 4.5 |
| Any regional course | 5.7 | 7.7 | 4.5 | 7.0 | 6.2 |
| **Techniques** | | | | | |
| Map reading | 4.5 | 5.0 | 3.9 | 3.5 | 4.0 |
| Cartography | 4.5 | 4.0 | 4.3 | 5.6 | 4.7 |
| Air photo interpretation | 4.5 | - | - | 4.5 | 4.5 |
| Field methods | 4.5 | 4.3 | 4.1 | 4.5 | 4.5 |
| Quantitative techniques | 4.0 | - | 4.0 | 4.5 | 4.1 |
| Methods | 3.0 | - | - | 3.7 | 3.5 |
| Any technique course | - | 6.0 | - | - | 6.0 |
| **Other** | | | | | |
| Introduction to geography | - | 4.5 | 5.0 | - | 4.8 |
| Senior seminar/ Colloquium | 3.7 | 4.0 | 4.7 | 4.0 | 4.0 |
| History and philosophy | 4.0 | - | 3.0 | 3.0 | 3.5 |
| Tutorial | - | - | - | 4.0 | 4.0 |
| Independent study/thesis | - | - | - | 7.0 | 7.0 |
| **Electives** | 6.8 | 8.6 | 20.9 | 13.8 | 11.1 |

TABLE IV

A Consensus Major Program in Geography

| Course title | Quarter credit hours |
|---|---|
| Introductory physical geography | 7 |
| Advanced physical geography | 5 |
| Cultural/human geography | 5 |
| Economic geography | 5 |
| Regional geography | 5 |
| Map reading/cartography | 5 |
| Senior seminar/colloquium | 5 |
| Electives | 10 |
| Total | 47 |

TABLE V

Number of Times Specific Cognate Fields Cited More than Once were Cited By The 26 Chairmen Who Cited Specific Fields

| Cognate Field | Number of Citations |
|---|---|
| Mathematics/statistics | 20 |
| Geology/geomorphology | 15 |
| Economics | 12 |
| Sociology | 10 |
| Anthropology | 8 |
| History | 8 |
| Political science | 6 |
| Botany | 4 |
| Biology | 3 |
| Physics | 2 |
| Planning | 2 |
| Population | 2 |
| Zoology | 2 |

Although specific courses outside the department are not required, undergraduate students in geography are encouraged by their advisors to take work in cognate fields. Some responding chairmen simply stated that their students are expected to take work in related fields, but others were more specific as to fields, or even individual courses. It comes as no very great surprise to find that the union list of cognate fields cited by the forty responding departments is almost a catalog of subjects taught in most colleges and universities. Thirteen cognate fields were cited more than once by the 26 chairmen who mentioned specific subjects or courses (Table V). Mathematics and statistics head, the list, followed by geology and geomorphology. In general the social sciences were cited more often than the biological sciences, and the biological sciences more often than the physical sciences, apart from geology.

## Summary

Undergraduate major programs in geography have a greater degree of similarity than is commonly realized. They most frequently consist of a core of courses which is required of all students, and a concentration area in which the student develops a limited degree of specialization. The majority of core programs tend to be permissive rather than restrictive. They consist of groups of courses from which the student is permitted to select the course of his choice, rather than specified courses which must be taken by all majors regardless of interest.

The course titles which appear in most core programs are physical geography, cultural/human geography, economic geography, map reading/cartography, regional geography, and a senior seminar. The principal undergraduate concentration areas are physical geography, cultural geography, economic geography, cartography, planning, and the teaching of geography. Apparently undergraduate major programs in geography have not changed very much in the last two decades, perhaps even longer.